THE ENGINEERING AND MINING JOURNAL AND COAL

(Published Every Saturday at 253 Broadway, New York.)
Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LXIII. JUNE 26. No. 26

RICHARD P. ROTHWELL, C. E. M. E., Editor
ROSSITER W. RAYMOND, PH. D., M. E., Special Contributor.
SOPHIA BRAEUNLICH, Business Manager.
THE SCIENTIFIC PUBLISHING CO., Publishers.

Subscriptions are PAYABLE IN ADVANCE. For the United States, Mexico and Canada, $5 per annum; all other countries in the Postal Union, $7.
The address slip on the paper will show date of expiration of subscription. When change of address is desired both old and new address should be sent.
NOTICE OF DISCONTINUANCE.—The JOURNAL is not discontinued at expiration of subscription but is sent until an explicit order is received by us, and all arrearages are paid as required by law. The courts hold a subscriber responsible until the paper is paid for in full and ordered discontinued. PAPERS RETURNED ARE NOT NOTICE OF DISCONTINUANCE.

Main Office: 253 Broadway (P. O. Box 1833), NEW YORK.

Telephone Number, 3,095 Cortlandt.

New York Cable Address—"ROTHWELL." (Use McNeill's or A B C 4th Edition Code.)
London Cable Address—"WELLROTH." " " " " "

Branch Offices: Chicago, Ill., Monadnock Building, Room 737.
Denver, Colo., Boston Building, Room 206.
Salt Lake City, Utah, 316 Atlas Building.
San Francisco, Cal., 207 Montgomery Street.
Birmingham, Ala., Chalifoux Building.

London, Eng., Office, 20 Bucklersbury, 366 & 367. E. Walker, Manager.

English subscriptions to the JOURNAL may be paid at the London office at the rate of $7 = £1 8s. 9d.; the publications of the Scientific Publishing Company may be bought at the rate of 4s. 2d. to the dollar, net.

CONTENTS.

	Page.
The Duty on Iron Ores	655
The Atomic Weight of Chromium	655
Copper Production and Exports	655
Fuel Gas in Cities	655
Sales of Southern Pig Iron	656
The Elmore Copper Depositing Process	656
The Chilean Nitrate Companies	656
The Ashcroft Process for Treating Zinc-Lead Sulphides	656
American Competition in the Foreign Iron Trade	656
New Publications	657
Books Received	657
The Extraction of Sulphur from its Ores in Sicily.—G. Aichino	658
Need of Smelting Works at Oaxaca, Mexico.—Maurice Clark	658
* A New Electric Connector.—F. E. Austin	658
The Colombian Gold Mining Company.—Don Enrique	658
The Witwatersrand Gold-Field and its Working—II.—L. De Launay	659
Making Diamonds	661
Nitrosylized Slag as an Addition to Hydraulic Cement.—A. D. Elbers	661
Microscopical Examination of Iron and Steel—I.—Albert Sauveur	662
Notes on the Estimation of Arsenic in Copper.—George L. Heath	663
* An Electric Furnace for the Laboratory	664
The Fortuna Gold Mine, Arizona.—Wm. P. Blake	664
Recent Decisions Affecting the Mining Industry	665
New Work in the Villa Rica District, Georgia.—W. M. Brewer	665
A New Jersey Clay, Ocher and Iron Ore Deposit.—Matthew Penhale	665

Notes: German Iron Trade, 657—Cost of Water Gas in England, 658—Mineral Production of Bosnia, 658—Electrically Welded Steel Barrels, 658—Coal in Jamaica, 663—Coal Exports in Great Britain, 663.

* Illustrated.

Personal	666	New York	672
Obituaries	666	Ohio	672
Societies and Technical Schools	666	Oregon	672
Industrial Notes	667	Pennsylvania	672
Trade Catalogues	667	South Carolina	672
New Patents	668	South Dakota	672
Machinery and Supplies Wanted	668	Utah	672
Mining News.		Virginia	673
United States:		Washington	673
Alaska	668	West Virginia	673
Arizona	668	Wyoming	673
Arkansas	668	**Foreign:**	
California	668	Africa	673
Colorado	669	Asia	673
Connecticut	670	Canada	673
Florida	670	South America	674
Idaho	670	**Markets.**	
Illinois	670	**Coal:**	
Kentucky	670	New York	674
Maryland	670	Buffalo	674
Minnesota	670	Chicago	674
Missouri	671	Pittsburg	674
Montana	671	**Metals.**	
Nevada	671	**Iron:**	
		Pig Iron Production	675
		New York	675
		Chicago	675
		Cleveland	675
		Philadelphia	675
		Pittsburg	676
		Gold & Silver	676
		Prices, Statistics, Imports and Exports	676
		Foreign Coins	677
		Copper	677
		Tin	677
		Lead	677
		Spelter	677
		Antimony	677
		Nickel	677
		Platinum	677
		Quicksilver	677
		Minor Metals	677
		Chemicals and Minerals:	
		New York	677
		Liverpool	678
		Miscellaneous Dividends	679
		Meetings	679
		Late News	679
		Assessments	682
		Dividends	682
		Mining Stocks:	
		Market Reviews:	
		New York	678
		Boston	678
		Cleveland	678
		Los Angeles	678
		Salt Lake City	678
		San Francisco	679
		London	679
		Paris	679
		Rossland, B.C.	679
		Stock Quotations:	
		New York	680
		Ind. and Coal	680
		Philadelphia	680
		Pittsburg	680
		Boston	680
		Baltimore	680
		Cleveland	680
		Aspen	680
		Colo. Springs	680
		Denver	681
		Butte	681
		Helena	681
		San Francisco	681
		Los Angeles	681
		Salt Lake City	681
		Rossland, B. C.	681
		Mexico	681
		London	682
		Paris	682
		Valparaiso	682
		Shanghai	682
		Mining Co's:	
		List of	683
		Current Prices:	
		Minerals, Chemicals, etc	684
		Advt. Index	19
		Advt. Rates	20

The extent to which tariff making is now specialized and the schedules decided by the demands of particular interests is shown by the curious fact that one of the Senators from Pennsylvania, during the debate now pending, offered an amendment to the bill providing that iron ore should be put upon the free list. This was too much for the committee in charge of the bill, however; and Senator Penrose's proposition was subsequently modified, at the instance of his colleague, Senator Quay, so as to admit free of duty iron ores from mines in foreign countries owned and operated by American citizens. In this form the amendment is still pending, no action having been taken upon it. The obvious intention of the provision is, of course, to admit free the ores from the Cuban mines which are owned or controlled by certain large companies which are constituents of the Pennsylvania senators.

Though in our opinion it would certainly be desirable to admit all iron ores and indeed all raw materials of every kind free, this incident shows how local considerations may modify the views of senators who are supposed to be the foremost representatives of extreme protectionist views. At present the indications are that no changes will be made, but the duty of 40 cents a ton will remain, as in the present tariff.

Investigations in pure science are often unintelligible to the practical man, and generally appear useless; yet sometimes their bearing upon technology and industry is exceedingly direct. An instance of this kind is pointed out cleverly by Mr. F. W. Clarke in a recent number of the *Journal* of the American Chemical Society. Certainly there is nothing more uninteresting to the metallurgist, unless it be an essay in pure mathematics, than an account of the redetermination of the atomic weight of a certain element. The question is often asked, Why are new determinations important? Are not those now accepted good enough for practical purposes? To this question Mr. Clarke makes the following answer:

There are two rival values for the atomic weight of chromium. The 52·5, based on the old work of Berlin, is still used by European analysts; the other, 52·1, based on later and more accurate researches, is used in the United States. The Baltimore Chrome Ore Works imports chromic iron in cargoes of about 2,500 tons, which are assayed in Glasgow and Baltimore. The chemists of the former city based their percentage calculation on the atomic weight of chromium, 52·5, and those of the latter place on 52·1. The variation in percentage resulting from this amounts to a difference of $367.50 in the value of a cargo.

So far this year the United States has exported over half its copper production, the exact figures being 58·6 per cent. The output has continued large, having reached during the five months ending with May a total of 88,998 long tons, according to the statement of Mr. John Stanton, statistician for the producing companies. This was an increase of 3,643 tons over the very large output of last year; but the gain was a little more than absorbed by the increase in exports, which were this year 52,193 long tons, or 3,672 tons more than in 1896. Our own consumption of copper has therefore shown no increase, but has remained about stationary.

Notwithstanding the large quantities sent from this country and the fact that the production from European mines increased about 1,400 tons in the first five months of the year, the stocks of copper in sight have diminished. The European consumption evidently continues very large, as the supplies are all absorbed without difficulty. That the demand is strong is shown by the fact that the price of the metal has been well maintained and there is even, at the present time, an upward tendency. This is based entirely upon the demand, for there has been this year very little speculation in the metal. An enlarged demand from our own industries could be met only by a further increase in production.

The supply of fuel gas in cities for household use and for the generation of power is a question which is being discussed by the gas companies with a good deal of interest. At the recent meeting of the Western Association this subject was brought up, and the opinion was generally expressed that the chief prospect for extension of the business was in this direction. What can be done with fuel gas is shown by the experience of Pittsburg and other cities with natural gas, and the supply of fuel gas in the city of Bridgeport in Connecticut is understood to be working well. The experiment of the Dominion Coal Company at Halifax in Nova Scotia, where the gas is obtained from by-product coke ovens will be closely watched; it is said to be so far successful that the company is arranging its plans for the full installation of the larger plant to supply Boston and the adjoining cities.

We believe, as we have heretofore said on many occasions, that the ultimate solution of the question should be in the establishment of great plants at the mines, where the coal could be converted into gas, and from which it would be piped to the cities. A plan of this kind is said to be under consideration in Pittsburg, and an investigation of the cost of producing power under different circumstances is being made for that

purpose. It is said that the parties concerned believe that with the cheap and abundant supplies of coal accessible, the use of the best plant and careful attention to the saving of by-products, power can be supplied from the Pennsylvania and West Virginia mines at quite as low a cost as it is obtained at Niagara Falls. It is to be hoped that the experiment will be tried.

In our market reports last week we referred to a reported large sale of Southern pig iron, but the details were not then obtainable. We are now informed that the purchase of 100,000 tons of pig iron, which is one of the largest of the kind on record, was made by Rogers, Brown & Company, from the Tennessee Coal, Iron and Railroad Company, the deliveries to extend over several months. About one-fourth of the iron is to be of No. 2 foundry grade; one-fourth No. 3 foundry, and the remaining half No. 4, or gray forge. The prices to be paid are $6.25 per ton net at furnace for No. 2 foundry iron; $6 per ton for No. 3, and $5.75 for forge and No. 4. The whole transaction will amount to nearly $600,000, and will take up a large part of the Tennessee Company's production for several months.

While the iron is, of course, bought to sell again, it is not a purely speculative transaction; that is, the iron is not bought to store up and hold for a rise, but for ordinary trade. We understand, indeed, that more than 10,000 tons of it has already been resold for export to Europe.

In this connection we may note also that agents of both French and Belgian ironmasters have been recently in this country for the purpose of buying pig iron, or at least to examine and report on the making of pig iron here. The Belgian visit resulted in some trade. At present the Belgian blast furnaces cannot supply the demand from the steel works, and a larger supply is needed; that it should be sought here is quite natural, especially when we remember that trade all over Europe is flourishing; and that the mills are taking raw iron as fast as it can be turned out.

The Chilean nitrate companies do not seem to have had a prosperous year, and the reports now coming in are not encouraging. The Santa Rita Company has passed its dividend and pays nothing for 1896; the Paccha-Jazpampa reports a loss on its operations for last year, having increased the debit balance of its profit and loss account by $21,330. Over-production and consequent low prices have brought about this state of affairs, and the prospect for improvement seems rather remote. At the meeting of the Santa Rita shareholders the chairman said that the future results depended on the formation of a stricter combination than any heretofore existing and a close restriction of output to the demands of the market. There have been numerous combinations among the companies already, but as a rule they have not lasted long, and the limits set to the output have either been placed too high, or else they have not been observed. Here, as in other combinations of the kind, the great difficulty has been to adjust the allotments of the different companies. The large profits made by those who first worked the nitrate beds led to the organization of a number of companies with large capitals, and the necessity of paying something on the shares has driven most of them into the attempt to work on a large scale and to resist restrictions which might keep down their receipts, though they might result in a higher profit on the smaller amount of business done. It is the usual difficulty which follows efforts to control trade through combinations. They always result in too high capitalization, over-production, restricted consumption, bad faith on the part of some of the producers and final collapse, leaving the trade in a worse condition than if it had developed under a healthful rivalry. The European shareholders who bought the inflated shares at inflated prices are now seeing the other side of combination.

Some four years ago, in 1893,* we noted the experimental work done in great Britain by the Elmore process, which was a method of making copper tubes by electro-depositing the metal on a revolving core or mandril. Although patents were taken out by the Elmores in different countries, and companies were formed in England, France and Belgium to work the process, it did not prove a success. The chief trouble was that the tubes were not homogeneous, but failed under pressure, the thin layers of copper peeling off or exfoliating. Some work was done by the company in making rolls for calico printing and similar purposes, but its tube manufacture was not a success.

We are now informed that M. Secretan, in France, has made certain improvements in the Elmore process, by which the defects have been overcome and tubes are made which meet the requirements as to strength, and are free from the tendency to separate in layers. Moreover, by this process cylinders are made of any required thickness which are afterward cut by metal saws or other appropriate tools into spiral strips, which are drawn into wire; thus avoiding the work of preparing wirebars in the usual way. M. Secretan's improvements, we understand, are not patented, but their nature has not been made public, though they are said to be chiefly mechanical improvements and an addition to the solution. He is now furnishing unmarked tubes to the Elmore companies in England and Belgium, which are sold by those companies as their product.

A process by which the same result is obtained as by M. Secretan, and cylinders or plates made by electro-deposition, which could also be cut into strips and drawn into wire, was described by Mr. Herman Thofehrn in our columns some nine months ago.* This process claimed by Mr. Thofehrn may be similar to M. Secretan's method.

The Ashcroft Process for Treating Zinc-Lead Sulphides.

The Ashcroft process was brought forward prominently somewhat over a year ago, having been devised by Mr. E. A. Ashcroft for the special purpose of treating the zinc-lead sulphide ores of the Broken Hill mines in Australia. This group of mines, of which the principal ore is the Broken Hill Proprietary Company's, have, as is well known, a very large quantity of these sulphide ores, carrying on an average about 25 per cent. lead, 21 per cent. zinc, 15½ per cent. sulphur and 15 oz. silver per ton. Up to the present time no satisfactory process of working these ores at a moderate cost has been put in practice. The question of treating these, however, has for years been the subject of much consideration, especially by the Broken Hill Proprietary Company, with which Mr. Ashcroft was at one time connected as electrician; that company realizing that the future of its great mine depended upon the handling of the sulphides, as the reserve of oxidized ores gradually became exhausted.

The Ashcroft process was not adopted by the Proprietary Company, however, but was brought forward in England. After some preliminary experiments had been made in that country—though no full account of the results of these experiments was ever made public—a company known as the Sulphide Corporation was floated in London through the agency of the Exploration Company. At first there were two companies, one in England and one in Australia, but the two were united later, the capital stock being £1,100,000. The flotation was a successful one, and the shares went to a premium, notwithstanding rumors that at least some of the experts' reports on the process were unfavorable. An enormous plant has been erected at Cockle Creek, a point where a fuel supply can be conveniently obtained from the Newcastle coal mines. In addition to this it obtained control of one of the mines of the Barrier Range—the Broken Hill Block 10—which is said to have become a very valuable property. The Australian works are now so far completed that a part of them has been run.

At the time the process was first brought forward we suggested† that the descriptions published did not show that Mr. Ashcroft had met or was prepared to overcome the well-known difficulties of the case, and for this reason we did not believe that the solution of the Broken Hill problem had yet been reached.

We are now informed that the first practical operations at the Australian works have been a failure: and have shown that the process has not overcome the suggested objections. In view of this result it would be interesting to have a full account of the results of the first experimental operations in England; and to know whether the promoters of the company there were aware that those results were unsatisfactory when they undertook to float the shares. It is very unfortunate that the Exploration Company, so ably officered and managed as it is, and which has given us some notable examples of the success which attends careful technical management, should occasionally bring discredit on the engineering profession, losses upon investors and endanger its own great prestige by floating enterprises without proper and sufficient techinical advice, or it may be in the face of adverse professional opinions by competent experts.

American Competition in the Foreign Iron Trade.

The latest instance of American competition in the British iron trade is found in a recent letting of the contract for certain material for the Central Underground Railway in London. This is a new underground line, to be worked by electricity, and a large interest in it is held by the Exploration Company, which does not confine its investments to mines by any means. The contract was for steel channels, angles and other material for the cars, which are to have the steel frames frequently used in England, and the time of delivery, as well as the price, was understood to be an important point in deciding the letting. When the bids were opened it was found that an American concern had not only made the lowest prices for the steel, but had also offered to make its delivery at least three months ahead of any of its British com-

*See *Engineering and Mining Journal* for May 13th, 1893, page 434; and June 10th, 1893, page 529.

*See *Engineering and Mining Journal* for September 19th, 1895, page 276.
† See *Engineering and Mining Journal*, July 13th, 1895, page 26.

petitors. The American company received the contract, in spite of some protests against sending the order abroad.

There are other instances in point, including the letting of an important contract for Egypt to an American bidder. It is known also that some important Continental orders have come to this country; in addition to the large contracts for rails taken some months ago our esteemed British contemporaries to the contrary notwithstanding. Besides these, there is now a steady sale in Great Britain for certain American products; steel tinplate-bars from Pittsburg are found in many of the mills of Wales and Staffordshire, and steel billets are shipped in increasing quantities, as manufacturers realize the low price and high quality of our products. Another late instance is found in the fact, recorded in our market reports, that inquiries have been received in Pittsburg for steel pipe for the system of works which is to supply water to the Coolgardie gold-fields in Western Australia.

These things are seriously disturbing the British iron trade. German and Belgian competition is an old story and is met with but little concern, especially on foreign orders. The American rivalry, however, is new and, moreover, it is from a quarter where the British ironmasters have not expected rivalry for their own trade. The practical exclusion from American markets they have long accepted, secure in their trade with other countries; but that the American mills should step in and undersell them on their own ground is a shock, all the more painful for its suddenness. At first the English papers referred to these sales as only temporarily possible and the result of an abnormal condition of trade; lately we have heard very little of this, and in fact the trade papers have had but little to say beyond an occasional insinuation about "inferior quality," for which they offer no proof whatever.

The fact is that American competition has come to stay and will have to be reckoned with in all future calculations of the British trade. Our mills have proved their ability, with the best machinery and the best skilled labor, to furnish iron and steel either in raw or manufactured forms at as low prices as any of their competitors, or lower; and to turn out large quantities of material in manufactured form in a shorter time than any of them.

This ability to compete with the world on equal terms is being fully recognized abroad, and indeed everywhere except among our legislators at Washington, many of whom, with a curious lack of national feeling and of acquaintance with national progress, seem to think that our iron industries still need the protection of a high tariff to preserve them from the attacks of foreign competitors. When we can undersell the British ironmaster at home and take contracts for which all Europe is bidding, a protective duty is a manifest absurdity. It is of no service, and is not desired by a great many of our iron-men, who have every confidence in their ability to take care of themselves.

NEW PUBLICATIONS.

THE STAMP MILLING OF GOLD ORES. By T. A. Rickard. New York and London: The Scientific Publishing Company. Pages, 260; illustrated. Price, $2.50.

This book is based on a series of articles which appeared originally in *The Engineering and Mining Journal* and *The Mineral Industry*, and are now elaborated into a comprehensive treatise of 260 pages. It describes the best gold-milling practice in the principal districts of the world where a well-defined practice has been evolved, including Gilpin County, Colo.; the Black Hills, S. Dak., and the camps of the Northern Lode, in California; Clunes, Ballarat and Bendigo, in Australia; the Thames and Otago districts in New Zealand. The Witwatersrand of South Africa is not considered, probably because the practice there is still too new to have acquired well-marked characteristics.

In these districts the author has worked and the others he has studied on the ground with leisure to observe the minutiæ of their practice. With this ample preparation he was equipped for a critical consideration of the variation in practice in different parts of the world in a manner that would be impossible to any one who had not enjoyed the advantage of personal observation, and even with that an unusually keen eye for all that was going on, from the obtruding features to the minor details. With this explanation we shall be appreciated in the statement that Mr. Rickard's treatise is entirely different in method from all others on the same subject.

It differs from most others also in avoiding discussion of the well-known chemical reactions involved in gold amalgamation. In what Mr. Rickard gives us, however, there is no trace of a serving up of old data; it is throughout fresh and distinctive.

In his preface Mr. Rickard explains that his book "is rather a painstaking description of practice than a discussion of the chemistry and mechanics of the stamp-milling process . . . The ordinary operations of the stamp-mill do not involve a knowledge of nice chemical formulæ nor intricate mechanics." He has adhered closely to this idea throughout the book. There is no discussion in its pages that would not be as intelligible to the mill-man as to the educated metallurgist. The subjects of mill design, machinery operation, feeding, batteries, screens, care of amalgamating plates, etc., are treated uniformly in a clear, concise and practical manner. Especially valuable are the data of costs of milling, life of machinery, and percentage of salvage, which are analyzed and compared, one district with another, with lucid discussions of the reasons for differences. Most of these figures are nowhere else to be found, and we think that Mr. Rickard's book would be indispensable to everyone who is engaged in stamp milling.

The design of stamp mills and the machinery employed therein are well illustrated by sketches, detailed drawings and reproductions from photographs. These in many cases are dimensioned, and consequently are available as bases of working drawings. The book is printed and bound uniformly with the other publications of the Scientific Publishing Company. S. N. R.

LE FOUR ÉLECTRIQUE. Par Henry Moissan, Paris, France; Published by G. Steinheil; 1897. Pages, 385; illustrated. Price, $5.25.

This interesting publication treating on the Electric Furnace, constitutes a valuable addition to our technical literature. While its title is broad enough to include all electric furnaces its scope is limited simply to a consideration of Moissan's type of furnace. This is disappointing to those expecting to find a more general treatment of the subject. In other respects the subject is discussed as thoroughly as would be expected of an author whose proposed work in the line of reducing refractory oxides and fusing metals at high temperatures is familiar to almost every chemist. Moissan's book is divided into four chapters. The first chapter (52 pages) treats of the different models of his electric furnace and their special application in the fusion and volatilization of refractory bodies. Much of the matter here treated had previously appeared, we find, in the *Comptes Rendus*, and in the *Annales de Chemie et de Physique*.

M. Moissan states he invented the electric furnace he uses in the effort to obtain very high temperatures, and thus facilitate the solution of carbon in cast-iron and other metals, this being the first step in making artificial diamonds. He claims to have built the first furnace in which the calorific action of the current is clearly separated from its electrolytic action, although he admits that Siemens & Hutington were the first to employ a practical electric furnace. Moissan rejects the furnaces of Siemens & Hutington, Cowles, Grabau, Acheson and others, because in the furnaces cited the body to be heated is placed in the path of the electric arc, which carries vapor of carbon, and, frequently, other impurities, and which might, therefore, interfere with the desired reaction. He states, furthermore, that in none of the commercially-used electric furnaces can currents of variable intensities be employed satisfactorily. The author then proceeds to describe various models of his furnace, in which he claims the electric arc is easily managable and possesses great steadiness. Moissan's furnace, however, while excellently adapted for experimental and laboratory use, admittedly does not compare favorably with other well-known types of electric furnaces for work on a large scale. Moreover, his continuous furnace was anticipated, it appears, by the inventor F. Chaplet, in August, 1893. Further data on the subject of the different kinds of electric furnaces for reducing and refining metals can be found in the *Zeitschrift für Elektrochemie* in articles by Dr. Borchers.

The second and longest chapter of Moissan's book (151 pages) discusses the three varities of carbon, the diamond, graphite and amorphous carbon, and includes Moissan's classical work on the reproduction of the diamond. The third chapter (80 pages) describes the pyro-electrical production of the following elements: Chromium, manganese, molybdenum, tungsten, uranium, zirconium, titanum, silicon and aluminum. Finally, the fourth and last chapter (90 pages) discusses the carbides, silicides and borides and their preparation, properties and composition. In this chapter, M. Moissan claims to have been the first to produce calcium carbide in an electric furnace, based on his note of December 12th, 1892, to the *Comptes Rendus*, and states that the reference to calcium carbide in the United States patent of February 21st, 1893, granted to Thomas Willson (Moissan misspells the name) has no scientific value besides being of later date. As a matter of fact, however, this patent was filed August 9th, 1892. In this connection we must also call attention to the not generally known fact that M. Moissan does not specify *crystallized* carbide, to which Willson's earlier patent is limited, in the communication referred to above, and that Willson has furnished affidavits showing that he actually antedated Moissan by several months. On these grounds, the United States Patent Office allowed Willson's broad claims covering the manufacture of calcium carbide. The Bradley patents, dated 1883 and granted in 1892, on electric reduction, whose validity has recently been upheld by a court decision, cover Willson's process generically, but not specifically.

Moissan's book is replete with striking and important facts relating to the investigations conducted by the author with great care and skill. We take pleasure, therefore, in recommending *Le Four Électrique* to everyone interested in the chemistry of high temperatures and in the practical application of the electric furnace in metallurgy. T. U.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

The Bauxite Deposits of Arkansas. By J. C. Branner. Chicago; the University of Chicago Press. Pamphlet. Pages 38; illustrated.

Transactions of the Association of Civil Engineers of Cornell University, Volume V., 1896-1897. Ithaca, N. Y.; Published by the Association. Pages, 129; illustrated.

L'Or en Sibérie Orientale (Gold in Eastern Siberia). Volume I; the Trans-Baikal. Volume II; the Amour Province. By Edouard David Levat. Paris, France; Edouard Rouveyre. Pages, 202 and 470; illustrated.

The Building Materials of Pennsylvania. I.—Brownstone. By Thomas C. Hopkins. Appendix to the Annual Report of the Pennsylvania State College, for 1896. State College, Pa.; Published by the College. Pages, 122; illustrated.

German Iron Trade.—The exports of iron and steel in all forms from Germany for the four months ending April 30th amounted to 423,618 metric tons, against 541,255 tons for the corresponding period in 1896, and 466 518 tons in 1895 The decline this year was chiefly in shipmen of pig iron to Belgium.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
Letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Extraction of Sulphur from its Ores in Sicily.

Sir: In order to be exact, I beg to call attention to two points in the abstract of my paper on the "Extraction of Sulphur in Sicily," given in the *Engineering and Mining Journal* for April 24th, 1897, page 405. From it one might suppose that the method of smelting in a solution of calcium chloride is now in use in Sicily. Such a method, first proposed about 30 years ago, has never been in use; it was only tried, so far as my knowledge goes, in 1883, without any useful result.

Concerning the steam extractor, the operation does not last 24 hours. In the system in which the cylinders are kept vertical during the charging and horizontal in smelting seven operations are usually made in 24 hours. The position of the cylinder is changed after charging, by revolving it on a horizontal axle. G. AICHINO.

ROME, ITALY, June 3, 1897.

Need of Smelting Works at Oaxaca, Mexico.

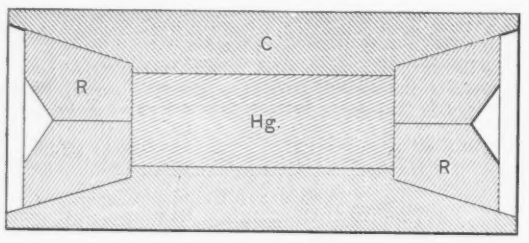
Sir: I wish to present to your many readers the existing opportunity to erect a custom mill in the vicinity of Oaxaca, in Mexico. Ores of medium and high grade are sent to the city from the mines within a radius of 50 miles in quantities of 10 to 20 carloads per week, and are there sold to ore buyers for shipment to the smelters in Monterey or for export to England or Germany. These ores contain from 60 to 1,000 oz. silver, and from a trace to 30 oz. gold per ton of 2,000 lbs. The freight from the mines varies from $5 to $25, Mexican money, and the freight and treatment charge made by the ore buyers is $30 to $40 per ton. The ores are paid for on the basis of $1 per Mexican ounce for silver and $33 per ounce for gold. This is equivalent to about 86% of the silver and about 82% of the gold value. These percentages are not difficult to obtain in milling, and as the cost of milling should not exceed $8, Mexican, per ton, there would be a handsome profit at less rates than those now charged by the ore buyers. If the charge for treatment were placed at $15 to $20 per ton there would be a good margin for the mill owner, and it would enable the mine owners to dispose of ores of a much lower grade than is possible at present. Of these lower-grade ores there are many thousand tons on the dumps and in the mines which cannot be handled profitably under existing conditions.

The City of Oaxaca has a population of 40,000. It is the terminus of the Mexican Southern Railway, by which it is connected with Puebla, 367 km. distant. Thence there is railway communication with the City of Mexico and with Vera Cruz. The elevation of Oaxaca is 5,067 ft., and the climate is delightful. Labor is cheap, laborers receiving 31c. per day of 12 hours. There is plenty of water and wood in the neighborhood. Wood is worth $5 to $6. Mexican, per cord: quicksilver, $75 per flask; salt, $45 to $50 per ton. The cost of a 10-stamp combination gold and silver mill, including site, complete and ready to run, would be $45,000 to $50,000, Mexican. The working capital required is about $50,000, Mexican.

OAXACA, MEXICO, June 5, 1897. MAURICE CLARK.

A New Electric Connector.

SIR: A new electric connector recently patented may be of interest to you, as it has a wide range of application in mining industries. The apparatus consists of an insulating cylinder *C*, arranged to hold a certain amount of conducting amalgam *Hg*, and two soft rubber ends *R R*, having conical-shaped openings terminated with pin-hole aperature through which a conducting wire may be forced. The ends being of elastic material keep the pin-hole aperature normally closed so that no amalgam



A NEW ELECTRIC CONNECTOR.

can escape or become oxidized by contact with the air. To make a connection all that is necessary is to force the bare ends of the conducting wires through the aperature into the amalgam. The outside of the connector being of insulating material, there is no possibility of short circuits by contact, and the continuity of the line insulation is retained.

In blasting these connectors effect a great saving of time in making connections and can be used repeatedly. These connectors have been used in laboratory practice and in the field with perfect success.

DARTMOUTH COLLEGE, HANOVER, N. H., June 10th, 1897. F. E. AUSTIN.

The Colombian Gold Mining Company.

Sir: I saw with interest in your issue of May 1st some account of the Colombian Gold Mining Company. Doubtless the history of the Santiago Gold Mining Company, whose mines have been leased by the new concern, is well known to your readers, for years ago when efforts were made to boom the stock of the Santiago Company on the New York mining market the *Engineering and Mining Journal* kept its readers well informed. The La Guaca mine, near Santiago de Veraguas, was opened or reopened from old Spanish times by the late Colonel Farrand and Henry Schuber, an American resident of Panama, about 1882. They put a small plant on the property which cost about $10,000, and during the six or eight years that followed I frequently saw remittances of two or more bars sent to Panama, and from there shipped to New York, amounting from $2,000 or $3,000 each. In the course of time, however, Schuber and Ferrand disagreed, and it was decided that Schuber should try and sell the property in New York. This he failed to do; Colonel Ferrand then went to New York and sold La Guaca to George William Ballou for $20,000 on the favorable report of a Mr. J. M. Harper. Your readers will remember that Colonel Ferrand also sold to Ballou the mine called Gran Remance, which Mr. Ballou later sold to an English company. Mr. Harper made plans for a 20-stamp mill for La Guaca mine. The machinery was sent down from San Francisco by schooner to a point selected on the cost near the port of Santiago de Veraguas, and transported thence to the mine under Colonel Ferrand's direction. Six months later, however, they decided to install only 10 of the stamps, which were worked long enough to release both Ferrand and Mr. Harper. They were succeeded by an engineer named Mayer, under whom business went on fairly well for a time, but discipline at the mine became slack, to the detriment of the property, and no more bars of gold were shipped from the mine. About this time the directors of the Santiago Gold Mining Company ordered Mayer to report to them in New York, but he died on the way of yellow fever.

After that the mine was shut down and was abandoned until about two years ago, when Colonel Ferrand went to Santiago. He found the plant at the La Guaca mine to be nearly a total wreck, but with much courage he set to work and succeeded in milling a lot of ore, which gave the same results as on earlier occasions. He told me that the tailings from the ore worked during the Mayer time had been worked over in a small way by the natives, who had gotten out more gold from them than should have escaped the amalgamating tables. Colonel Ferrand returned to New York about the end of 1895, and he told me that certain parties would on his report reopen the mine within six months. Shortly afterward, however, I was pained to read in your columns that he had died in Florida. The new company's engineer, Mr. R. M. Straus, has not yet to my knowledge put in an appearance on the Isthmus.

The accounts of American mining men and prospectors who have examined the ground agree that there are no large bodies of ore in the vicinity of Santiago. The veins are all small, and though they are rich it would seem that a large stamp mill could not be be kept busy, as there would always be an insufficiency of ore. DON ENRIQUE.

PANAMA, Republic of Colombia, June 12, 1897.

Mineral Production of Bosnia.—The official statement for the year 1896 shows that the production of the mines of Bosnia included 442 metric tons chrome ore, 4,003 tons copper ore, 583 tons Fahl ore (gray copper), 23,213 tons iron ore, 2,000 tons iron pyrites, 6,821 tons manganese ore, 13,720 tons salt, 222,724 tons brown coal (lignite). All of these showed some increase, except manganese ore, in which there was a decrease of 1,324 tons. The gain in lignite was 27,282 tons. Petroleum appears for the first time in 1896, but the total was only 20 hectoliters. The production of metals included 11,159 tons pig iron and castings, 54,182 tons bar and rolled iron, 3,265 tons open-hearth steel ingots and 206 tons copper. The increase over 1895 in pig iron was 8,139 tons; no steel was made in 1895.

Cost of Water Gas in England.—According to a recent paper by Mr. Corbet Woodall, the cost of carburetted water gas in England is determined chiefly by the price at which oil can be bought. The sources of supply are the wells of Russia and America, and also, though to a small extent only, the shale oil works of Scotland. At present suitable oil can be purchased at 5c. per gallon at English ports, which represents about 5·5c. at the average gas works. Gas of an illuminating value of 20 candles will require 3 gals. of oil per 1,000 cu. ft. and 40 lbs. of coke will also be used in making that quantity. The cost of making gas of 20 candle-power, with oil at 5·5c. per gal. and coke at $3.60 per ton, will be 32c. per 1,000 ft. in the gasholders. This is about the same as the current average cost of making coal gas of 15 candles.

Electrically Welded Steel Barrels.—London *Engineering* describes the method of making welded steel barrels, which is now carried on at Uxbridge, England, under the Barrbeat-Stange patents. The body of the barrel is rolled out of steel plate, and buckling is prevented by easing the rolls at the ends. The rolls then bear only on the center of the sheet passed through them, and thus extend the metal there and there only, the sheet remaining its original length at its two edges. Under these conditions it shapes itself naturally into the barrel form as the rolling proceeds, and when removed only requires its ends sheared straight in a special machine, and to have its longitudinal seam welded. This latter operation is effected electrically by the Bernados process, with which no skilled labor is required. The bent sheet is clamped with its two opposing edges some ¼ in. or ⅜ in. apart; a small fragment of steel is placed over the opening and melted by means of the electric arc by one man, while another stands by to hammer it as soon as ready. By welding on successive fragments in the manner named, the whole joint is finally completed, and the cask is finished by adding its heads and its bung bosses. The heads are first cut in a circular shearing machine, and then corrugated and dished in a 400-ton hydraulic press. The dished edge fits inside the barrel head, and a ring of sheet metal ⅝ in. to 1 in. wide is also placed round the head of the barrel outside. The three edges of this ring, of the barrel itself, and of the head, are then melted together by the electric arc. The bung bosses are also welded on. These are steel stampings, and being much thicker than the sheet forming the barrel body, it is the practice after the weld is finished to place a heavy mass of hot iron on top of the work until the whole is cooled down. A certain annealing effect is thus secured by which possible contraction strains at the joint are avoided. The Uxbridge works of the company have a present capacity of about 240 barrels per week.

THE WITWATERSRAND GOLD-FIELD AND ITS WORKING—II.

THE GEOLOGY OF THE GOLD-BEARING SERIES.

BY L. DE LAUNAY.

In referring generally to the geology of the Witwatersrand (in the *Engineering and Mining Journal* for June 19th, page 631), M. de Launay showed that the quartzite and conglomerate series in which the gold-bearing beds occur present strata formnig one great synclinal striking northeast and southwest, in such wise that throughout the Rand, properly so-called, from the Western Rand to Modderfontein, along the principal mining belt, the beds dip constantly southward, whereas on the southern limit of the synclinal, toward Nigel and Heidelberg, they dip northward.

It will be seen from the accompanying cut, Fig. 6, that the amount of dip varies extraordinarily from point to point between the vertical and the horizontal. At some localities even, such as the Chimes mine, there is overfolding (angle of dip greater than 90°). Nevertheless, whatever section we may take from north to south perpendicular to the axis of the synclinal, it generally seems, as one might expect, that, following the succession southward, the beds tend nearer and nearer to the horizontal as one approaches the axis of the synclinal. The Black Reef, which lies sensibly in that axis, is almost always horizontal or nearly so.

A very characteristic circumstance, and a direct consequence of this arrangement of the beds in a basin, is that the pitch of a particular bed in a section, and, therefore, in a particular mine, constantly and very rapidly diminishes as one goes downward. Thus, for example, a dip of 70° or 80° at the outcrop becomes only 30° before one reaches a depth of 1,000 ft. There is no need to dwell on the importance of this fact from the industrial point of view.

A practical consequence of this is that, in order to work a given length following the inclination of the bed or reef, one need not go down the abnormal number of reversed faults recorded in the area, the proportion of which is no less than 70%.

These general observations on the comparative regularity of the strata (so far as regards fissures and mechanical disturbances) when coupled with the evidence afforded by all the transverse sections taken in the various workings and borings, lead to the inference that it will be possible to predict the dip which the reefs will be found to take as new workings are opened up, by simply prolonging the contour lines or curves obtained from the sections now known—according to some law of continuity. It is true that, in a formation folded as this is, there is no reason why smaller secondary folds should not superadd themselves to the great main fold, thus producing a series of gentle undulations around the general curvature; and the more nearly the reefs approach the horizontal the greater is the chance that such sinuosities will recur. But secondary folds of that character are unlikely to have any influence so far as regards the industrial future of the workings, and within the limits permissible for the expression of an opinion on such a matter the writer does not believe that one need fear in deep-level mines, after striking a reef with a slight dip, to find it suddenly re-assume lower down the steep dip observable at the outcrop.

If we prolong in imagination the curvature of the reefs, and take account of their probable reappearance in the other limb of the synclinal 15 or 20 miles away at the very least, we shall arrive, moreover, at the conclusion that the fairly moderate dips of 20° to 30° now generally met with are likely to go on for some considerable distance. Also, that the farther one goes the slower will be the diminution of dip, since in all probability the horizontal will be reached only on approaching the axis of the synclinal—that is to say, in a zone where the beds must lie so deep that there is very little chance of their ever being looked for in that particular area.

The gold in these beds does not occur in big crystals, or in filaments, or in venules, as in the auriferous quartzes of California and Australia, but is found all over the Rand associated in the invisible state (so finely is it

FIG. 6.

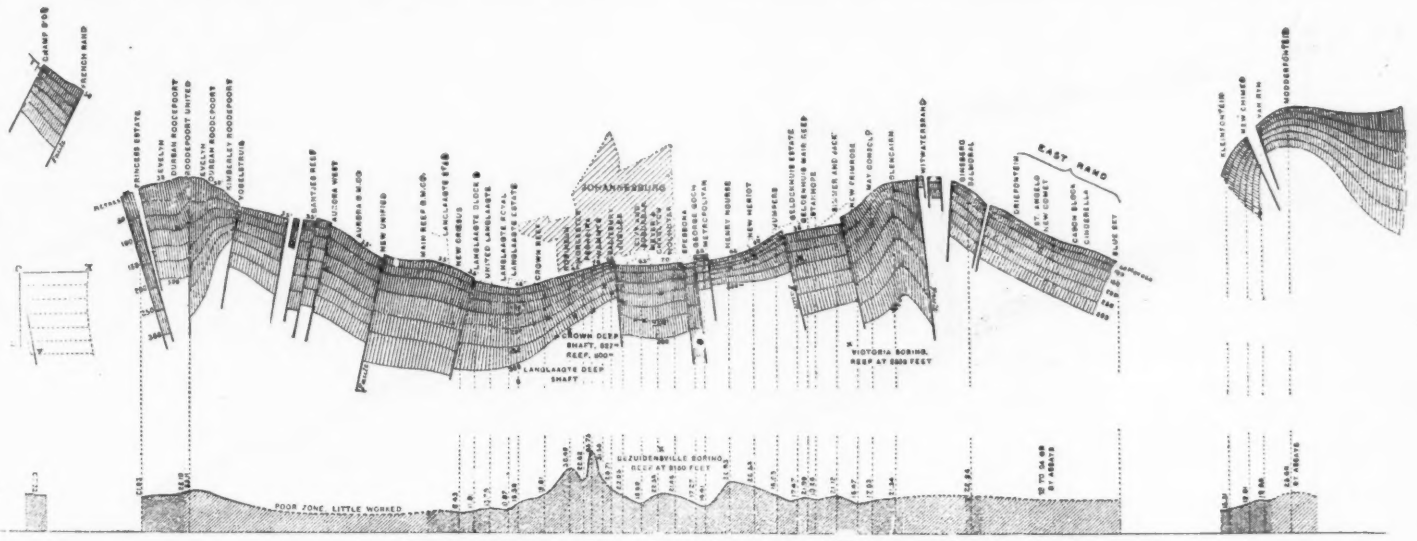


FIG. 7.

GENERAL FORM OF MAIN REEF SERIES AND VALUE OF ORES.

in vertical depth anything like the distance which it would have been necessary to go if the reef had kept its original dip. Another result of this change of dip in the beds with the depth was a disagreeable surprise for the first companies who set to work in the gold-field. They had wrongly assimilated the auriferous band to a vein, in other words, to a practically vertical plane, and had, therefore, pegged out rather narrow claims in the direction of the dip of the reef, supposing that this would nevertheless be found throughout a given claim within the practicable working depth: whereas the reef, on account of its becoming flatter, was really no longer to be found in the claim, and cropped up in a neighboring one.

Figs. 10–13 show a series of transverse sections taken from west to east at different points of the Witwatersrand. The contour lines of the reefs are seen to be described on these in a fairly regular sequence, and, save in exceptional instances, as at the Chimes mine (where the reef is especially dislocated by faults), or again at the Simmer & Jack (where, being nearly horizontal, a slight undulation causes it to take a completely different direction) it is seen that the line of greatest dip of the reefs follows in all localities, so far touched by exploration work, a perfectly continuous curve. This is, of course, as it should be in the case of a group of strata formed of homogeneous beds regularly overlying one another, yet up to a certain point independent of each other; these beds being subjected to the mechanical force of intense folding will be curved up and slipped lightly over each other, much as the several cards in a pack which one would seek to bend by bringing its two ends together.

It is this slipping of the strata over each other which is undoubtedly answerable for the numerous clayey salbands, the results of the rubbing together of two contiguous beds along a longitudinal fault. Sometimes they include segregation-veins of milky-white quartz, while geodes or vughs of the metalliferous ores are scattered in the neighboring conglomerate (iron pyrites, chalcopyrite, galena, blende, and native gold). To this phenomenon of sliding we must also attribute the fractures parallel with the strike of the beds, through which outflows of eruptive rocks or dykes have often made their way upward. The transverse disturbances which either may have been the result of the tearing asunder of the folded strata or may have taken place later have, on the whole, but little importance in the Rand, where the beds may be considered remarkable for their regularity, in comparison with what one usually observes in primary rocks. One should not, however, lose sight in this connection of

divided) with iron pyrites and silica in the cementing-material of a certain number of inter-stratified beds. Among these a few banks of conglomerate or reefs play the chief part.

Up to the time of the discovery of the Witwatersrand deposits no auriferous conglomerates had been worked on an industrial basis. It is true that examples of such beds were known, but theoretically rather than practically and the few that were known belonged to the Tertiary epoch, and partook of the character of recent placers. When little by little, after having first washed a few auriferous alluvial deposits, then prospected various gold-quartz veins in the Transvaal, the mining world began to realize the workable character of the Witwatersrand gold-bearing conglomerates, prospectors confined their search, with a kind of superstitious awe, to such beds as were absolutely identical with those which had yielded the first successful results. It is only by very slow degrees and in a timidly hesitant fashion that trials have been conducted on other analogous reefs, which either had begun by yielding unfavorable results, or had been simply passed over unnoticed even when they had been met with in the actual workings—of this the Main Reef itself is an example; it is a thick bed which was at first left aside.

In a general way the experience thus gained so far tends to contradict the opinion at one time universally held, and still tolerably correct in the great majority of cases, that the gold exists solely in the conglomerates, and particularly in certain thin seams of big pebbles, such as the South Reef, and often the Main Reef Leader in the Central Rand.

There is no direct relationship between the dimension of the pebbles or gravels and their richness in gold; and if any relationship there be, other influences must have intervened to counterbalance it. Similarly, it is impossible to state that the gold and the pyrites which are intimately associated with it have any well-marked tendency to accumulate, either at the base of the beds (as is almost invariably the case with gold placers), or at their summit. Sometimes they are found at the bottom, sometimes at the top, and at others midway between. Within the workings of a single mine one may, without any apparent reason, find the ore change from one position to the other. And, as the aspect of the ore furnishes no clue to its richness, and the gold can never be seen in it, one must resort for guidance to continual assays and analyses. Nor does the mineralogical character of the pebbles appear to have any distict relationship with the richness in gold, as should be the case if the gold and the pebbles were derived from the erosion of one and

the same quartz-vein. It is true that in some mines importance is attached to the presence of smoky black quartz, which is considered a good indicator, but experience very often belies this notion; the dark hue of the cementing material, which is a consequence of the abundance of pyritous inclusions, and the presence of this pyrite itself are the sole fairly constant characteristics of the richer ores.

Another question of prime importance for the gold-mining industry is the more or less regular arrangement of the richer zones and their continuation in depth. Here it will suffice to say that, as a whole, the study of the Witwatersrand deposits leads us to recognize the existence of a certain number of particularly rich zones very well marked on the diagram of mean assays, Fig. 7. Looking still more closely into the matter, the observer will note that, as in all other metalliferous deposits, whatever be their origin, there is a kind of localization of the high assays, defining very irregular areas arranged in the plane of bedding. One will also note that, on meeting a fault or a dyke that has played the part of a fault, there is a sudden change (by reason of the suppression of the intermediate portions) in the gold tenor, and a rapid alternation from rich zones to poor. We find also approximate to the truth a law which is very generally held as correct in the Rand—namely, that the richness in gold and the thickness of the reef vary inversely. It is usually believed at Johannesburg that by some kind of law of compensation a reef is the richer the thinner it is, just as if there had been only a given quantity of gold available for

FIG. 10.

FIG. 11.

FIG. 12.

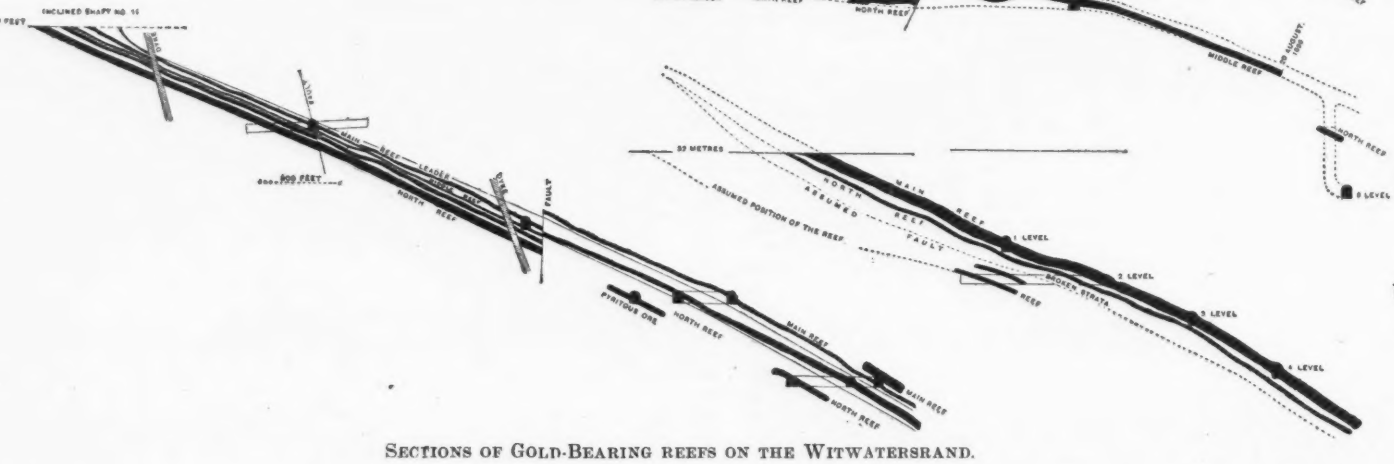


FIG. 13.

SECTIONS OF GOLD-BEARING REEFS ON THE WITWATERSRAND.

distribution within it. As a matter of fact there are very numerous exceptions to this rule.

To describe the principal reefs worked we find that, to begin with, in the north of the Rand there are banks of conglomerate inferior to the Main Reef. The reef recognized and worked up to the present on the Rietfontein claim alone belongs to this formation. This Rietfontein or Du Preez reef is very thin and irregular, and exploration work having been brief and hasty, the further course of the reef has not been carefully traced out.

About 1½ miles south of the Rietfontein Reef one finds along the whole extent of the Rand the important and well-known Main Reef Series, in which the chief workings lie. From noth to south, or from floor to roof, the reefs worked in this series are the following: The Main Reef, comparatively poor, 23 to 26 ft., rather neglected at first, but now being attacked pretty well everywhere; then the Main Reef Leader (often very close to the Main Reef) and the South Reef, both as a rule thin, varying from 1 or 2 to 40 in.; these two constitute the most reliable source of the wealth of the Rand. There are besides many unworked reefs, such as a North Reef under the Main Reef, and a Middle Reef between the Main Reef Leader and the South Reef.

This Main Reef Series extends all through the rich belt of the Witwatersrand, and on it are located nearly all of the mines. Beyond the Modderfontein, where the workings cease, the strata are very much concealed by drifts or by the Karoo beds. About 20 miles south of Modderfontein one meets a series of auriferous conglomerates dipping contrariwise from those in the Main Reef Series. They dip, that is to say, northwards, and are sufficiently similar to the Main Reef Series to make the observer plausibly infer that they are its repetition on the other flank of the synclinal.

Finally there are secondary reefs lying to the southward, that is, on the hanging-wall of the Main Reef Series. In crossing the Main Reef to go south, one meets, amid the quartzites which make up the great mass of the strata, numerous bands of conglomerate, which often contain more or less noticeable traces of gold. But this does not in the least imply that such gold as may be so found is workable there. Among these southern reefs are the Bird and Kimberley or Battery reefs. Workings are opened in the last-named at Rip, Battery Extension and Marie Louise mines south of Vogelstruis. In the west, this Battery Reef is met with again south of the West Rand mines on the Violet property. It takes there a turn to the south, and is accompanied at the hanging wall by a reef known as the Burgers Reef. It strikes across the Rietvlei farm from north to south, parallel with the Randfontein Reef. Due south of Johannesburg, one meets with an enormous mass of conglomerates, which have so far given rise to no important workings, and contain mere traces of gold. But these rocks are remarkable for the great abundance and enormous size of the pebbles of white quartzite which they contain. A little farther south one meets again with conglomerates in numerous very thick beds. On these the De Paaz mine was at one time started, and almost immediately afterward one comes to the great stretch of amygdaloidal diabases, which extend from west to east over a length of 20 miles and a breadth of 3,000 ft. from the farmstead of Doornkop to Olifantvlei, Rietvlei, etc. South of these eruptive rocks, and in many cases at the junction with the dolomitic limestones, occurs a very remarkable reef, often extremely rich. This is known as the Black Reef, and is worked at the Orion mine (Roodekop farm), and on the neighboring properties (Minerva, etc.) It appears to be, without doubt, the same reef as that which occurs farther westward on the Steyn Estate and Madeline properties.

The gold ores of the Witwatersrand are made up primarily of conglomerates and, quite secondarily, of coarse grits of quartzites, with more or less rolled quartzose constituents, cemented by a siliceous matrix, wherein are scattered small grains of quartz, and which contains veins of pyrites —a mineral with which the gold always appears to have been originally associated. The arrangement of the pebbles in the conglomerate is illustrated in Figs. 8 and 9. The dimensions of the rolled constituents may vary enormously from one auriferous band to the next, and this question of size gives no reliable indication as to the richness of a reef in gold. Nevertheless, in a given bed, corresponding to a particular period of de-

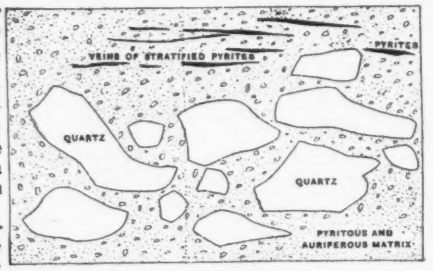


FIG. 8.

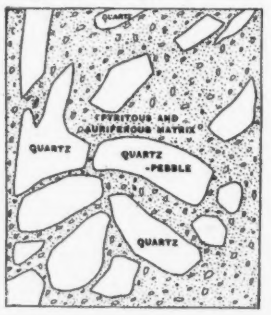


FIG. 9.

ARRANGEMENT OE PEBBLES IN CONGLOMERATE.

position, and, above all, at a particular spot in this bed, it is possible to assert that almost without exception gold segregates in association with the biggest constituents: that is, with those whose displacement by the waves has necessitated the largest amount of force. This holds good with the conglomerates properly so-called and also with fine-grained conglomerates and ordinary quartzites. But a not infrequent occurrence,

a few feet away from an ordinary quartzite, or from a small-pebbled auriferous conglomerate, is an absolutely barren band with big pebbles. Moreover, two neighboring bands with pebbles of exactly similar size may differ greatly as regards their gold content. The ore which is of the most frequent occurrence is a conglomerate with pebbles varying in size from that of a hazel nut to that of a hen's egg.

MAKING DIAMONDS.

In a lecture recently delivered at the Royal Institution in London, Professor Crookes said that speculations as to the probable origin of the diamond have been greatly forwarded of late years by improved means of obtaining high temperatures; and through the successful experiments of Moissan, microscopic diamonds have been made in the laboratory. He had provided a most powerful dynamo, specially made for the purpose, weighing 4½ tons, and when driven by a 50 to 75-H. P. engine generating a current in the electrical furnace of 700 to 800 amperes and 70 volts, yielding a heat of from 3,500 to 5,000° C. In the process of making diamonds, the first necessity was to select pure iron and to pack it in a crucible with pure charcoal from sugar. Half a pound of this iron was then put into the body of the electric furnace and the arc formed close above it to utilize the electrical current passing through it. The iron rapidly melts and saturates itself with the carbon. After a few minutes it is heated above 4,000°—a temperature at which the lime of the furnace melts and volatilizes. The current is then stopped, and the crucible is plunged beneath the surface of cold water, where it is held until it diminishes to a dull red heat. The sudden cooling solidifies the outer layer of iron, and holds the inner molten mass in a tight grip. The expansion of the inner liquid in solidifying produces an enormous pressure, and the dissolved carbon separates out in a transparent dense crystalline form—in fact, as diamond. Then commences the more tedious part of the process, the attacking the metallic mass with solvents to liberate the diamonds, the crystals of graphitic oxide, carbonado and bort—the cleansing operations being repeated until all the well-washed grains are collected and examined under the microscope. The laboratory diamonds burn in the air before the blow-pipe into carbonic acid, and in luster, crystalline form, optical properties, density and hardness are identical with the natural stones. Many circumstances, he pointed out, led to the conclusion that the diamond of the chemist and the diamond of the mine are akin as to origin, and that the diamond genesis must have taken place at great depths, under enormous pressure. Molten iron could have held the carbon in solution, and all the varieties of carbon crystals, and even the different tints of diamon ls from various mines and geographical areas, could be accounted for on this theory. It is certain, from observations made at Kimberley, corroborated by the experience gained in the laboratory that iron at a high temperature and under great pressure will act as the long-sought solvent for carbon, and will allow it to crystallize out in the form of diamond—conditions existent at great depths below the surface of the earth. But it is also certain, from the evidence afforded by the Arizona and other meteorites, that similar conditions have likewise existed among bodies in space.

NITROSYLIZED BLAST FURNACE SLAG AS AN ADDITION TO HYDRAULIC CEMENT.

Written for the Engineering and Mining Journal by A. D. Elbers.

When a cement briquette is kept immersed in water for several months, it loses considerable of its lime, say from 5 to 10%. This portion of the lime is in excess of combination, the cement composition being too basic to yield to it sufficient gelatinous silica to bind it. Hence, nearly all hydraulic cements can be improved by the judicious admixture of silicious substances that yield an additional supply of gelatinous silica. The volcanic earths, such as trass, santorin and puzzuolane, possess this property to a remarkable degree, but they are not much used for admixture on account of their comparatively high cost. A much cheaper and in some respects excellent substitute is found in blast furnace slag of singulo to sesqui-silicate constitution, high in alumina and lime, and finely pulverized. Dissolving lime reacts only superficially on such admixtures, but it extracts from them a little gelatinous silica, and the resulting compounds—minute particles of hydrosylicate—cement the mass more firmly.

Unfortunately, such slag contains from 1% to 3% of calcium sulphide-which is easily decomposed by water containing carbon dioxide. This sulphide obtains in the slag in intermolecular combination, which means that it is rather evenly distributed throughout the whole mass, and that even the smallest slag particles contain some of it. In dissolving—under the conditions in which it obtains in applied cement—it changes readily to calcium-sulphhydrate; the latter, being in aqueous solution, becomes mixed up with the gelatinous silica and with the dissolved lime, and the lime changes it back to sulphide. Thus the forming particles of hydrosilicate, which are to bind the mass more firmly, become tainted with unstable sulphur compounds, hence they are apt to disintegrate and to cause the cemented mass that contains them to weaken long after it has become indurated, sometimes after the lapse of years.

In order to illustrate this slag question more fully, it may be as well to sum up as follows: Crude slag that is sulphurous cements well at first, but is not a reliable constituent, and crude slag that is not sulphurous is usually so acid as to exert scarcely more chemical energy than ordinary sand does. There is, practically, no intermedium, for even the singulo-silicate slag from charcoal blast furnaces contains sufficient of CaS to be, in its crude state, objectionable for the purpose herein considered.

In order to free blast furnace slag from this objectionable feature, several methods have been proposed for desulphurizing such slag in its molten state; but they have not yet been tried, the chief obstacle being, that blast furnace managers are very reluctant to try anything that is apt to interfere in the least with other routine work. Moreover, with Rosendale cement selling as low as 70 cts. for a barrel of 300 lbs., and with Portland selling as low as $2 for a barrel of 380 lbs. net, the cemenr-producers are not over anxious to adopt any new ingredient unless its use will cheapen the cost of their product considerably; and so the matter rests.

There is, however, a possibility that the recently invented process, of nitrosylizing pulverized slag, will prove to be of greater commercial interest to both classes of these industries than anything that has thus far been attempted with that much neglected by-product. The main reason for this assumption is, on the one hand, that the condition in which the slag is to be delivered from the dump and paid for can be brought about by the furnace men without causing them any appreciable inconvenience, and on the other, that the slag which is thus delivered can be adapted for cement at a smaller cost than that which would be involved by any other effective treatment that has thus far been proposed. The treatment itself is very simple and offers no new features of general interest; it is fully described in the pntent specifications (United States Patent, No. 579,820, March 30th, 1897), which are rather too long to be reproduced in this paper. Suffice it to state, that nitrosylized slag is prepared by moistening finely ground slag of suitable composition with a weak solution of nitric acid, by adding more water after the acid has become neutralized, and by drying the leached mass. The complete treatment requires about ½ lb. of 60% acid (N_2O_5) and about 30 lbs. of water for each 100 lbs. of pulverized slag, and the product is cheap enough to be even sought after by the manufacturers of Rosendale cement.

The primary object of the treatment is, of course, to eradicate, as it were, the CaS that crops out on the surface of the slag-particles. The total quantity that becomes thus eliminated is rather small, and when the acid is used in the above-mentioned proportion it amounts to less than 0·1%, with slag that contains about 2%. This superficial desulphurization is, nevertheless, very effective, for the pores that are produced by the elimination of the sulphide are apt to become closed up by the formation of hydro-silicates in the beginning of the cement-reactions, and before any deeper reaction can set in, and thus any future deleterious action of the remaining sulphide is rendered impossible.

The secondary, but not less important, object of the treatment is to utilize the nitrosyl that is set free by the nitric acid while it reacts on the slag-particles. In other words, slag of singulo to se-qui-silicate-constitution, and high in alumina, contains constitutionally—or aside from purely accidental ferruginous matter—more or less of ferrous silicate, say, from 1 to 2%. It is well known that attenuated solutions of ferrous salts absorb nitrosyl with great avidity and under evolution of heat, the thermal effect ranging, according to various authorities from $+9^8$ to $+11^8$ calories. The ferrous silicate of the slag absorbs it likewise; hence it is to be presumed that this absorption must render its silica more disposed to sever its connection with the ferrous oxide, and to become gelatinous, when reacted upon by dissolving lime. The accidental ferruginous matter of the slag also absorbs nitrosyl and is thereby prevented from readily changing on its surface to ferric hydrate. As the formation of ferric hydrate involves an appreciable enlargement of the volume of the particles thus affected, it stands to reason that such a change is not desirable in applied cement; and as one volume of nitrosyl-gas requires 20 volumes of water for its solution, it is not likely that nitrosylized slag is apt to "rust" very quickly.

Coming now to the question of the actual efficiency of nitrosylized slag, the writer has arrived at the following conclusions:

1. High-class Portland cements, those that have been ground from carefully prepared stock that has been burned very hard, can only be improved by the admixture of small quantities, probably not exceeding 10% in the average.

2. Inferior Portland cements may be mixed with about their own weight of nitrosylized slag, and still give as good results as the neat. The following tests, recently made in the usual way, with briquettes of standard size may serve as an illustration:

A.—TEST OF HIGH-CLASS PORTLAND CEMENT.

No.	Composition of mixture.	Water added. Per cent.	Age. Days.	Tensile strength per square inch. Pounds.
1	Neat cement	25	18	563
2	" "	25	17	526
3	Cement: 80%, slag: 20%	25	16	426
4	" 60%, " 40%	22½	18	305

B.—TESTS OF AN INFERIOR PORTLAND CEMENT.

No.	Composition of mixture.	Water. Per cent.	Age. Days.	Tensile strength. Pounds.
1	Neat cement	23	19	310
2	Cement: 60%, slag: 40%	17	19	335
3	" 40%, " 60%	16	19	310

Briquettes made up of cement, nitrosylized slag and sand are apt to give rather poor comparative results as regards their test for tensile strength unless the sand is added after the cement and the slag have been thoroughly wetmixed, for it is scarcely possible to dry-mix three different substances as well as two. A much fairer test would be to slurry the mixtures, just as is done in working cement for the "second set," and to fill the slurry into the molds without heating it. The limit of tensile strength would then be barely as high as in testing by the usual method, but it would certainly be more in accord with the amount of resistance which the respective mixtures actually acquire in being applied to masonry.

A briquette, made by casting the mixture into the mold, and composed of:

Cement "A" 90%, and nitrosylized slag 10%, the water added being 30%, broke when 17 days old at 359 lbs. tensile strain per square inch. This is a pretty fair result, considering that this mode of testing is apt to lower the limit of tensile strength of even the best cements 40% or there about.

MICROSCOPICAL EXAMINATION OF IRON AND STEEL—I.

Written for the Engineering and Mining Journal by Albert Sauveur.

(*Copyright, 1897, by the Scientific Publishing Company.*)

This very promising branch of the metallurgy of steel dates back to the now classical researches of Dr. H. C. Sorby, of Sheffield, England, whose first paper on the subject was published in 1864 by the Sheffield Literary and Philosophical Society under the title "On a New Method of Illustrating the Structure of Various Kinds of Steel by Nature Printing"; and was followed by a number of other essays read before various scientific societies of Great Britain. In 1886 and 1887 Dr. Sorby presented to the Iron and Steel Institute two masterly contributions, which gave the results of his investigations, covering a period of over twelve years.

So great was the caution and so keen the observing power of this eminent microscopist that the foundation he laid for the new structure, although thoroughly and critically tested, has been found to be of a most trustworthy character. Further researches undertaken since by many investigators have confirmed, in their essential features, the truths of his observations and deductions concerning the microscopic constituents of iron and steel; and although the methods for the preparation of the samples have been somewhat modified and improved, still in their vital parts they remain such as he devised them. Whatever has been accomplished since in microscopic metallography has been done by following his footsteps. To Dr. Sorby and to him alone is due the pioneer's honor.

For 14 years after the publication of his first paper no other scientist seems to have deemed the subject of sufficient importance to warrant investigation, for there is no record of any work having been done until 1878, when Prof. A. Martens, of Berlin, published the first of a series of valuable contributions to the microscopy of iron and steel.

In 1885 Messrs. Osmond and Werth presented to the French Academy of Sciences their important essay upon the "Cellular Structure of Cast Steel." Still, it was not until Dr. Sorby read the papers already alluded to before the Iron and Steel Institute, that the importance of the subject was realized to some extent by the metallurgical world. These papers, however, aroused the interest of many investigators and were the signal for great activity in the field he had so brilliantly started to explore. Since then his researches have been continued with energy and earnestness in every metallurgical country, and the new science has made steady, and in later years remarkable, progress. The producer is beginning to appreciate the practical value of the microscope in connection with iron and steel making, and the large consumer has stopped to inquire whether, indeed, it does furnish him an additional and much-needed means of ascertaining with greater accuracy the quality of the material he consumes. The microscope may now be found in many of the largest steel works of the United States and of Europe. In Germany the microscopical examinations of metals has received official sanction, at the Technical Institute of Charlottenburg, a government institution, where, under the direction of Professor Martens, micrographic work is carried on in a laboratory especially and splendidly equipped for such researches. Much attention has been given to the subject by the French Society for the Encouragement of National Industry, which awarded to Mr. Osmond for his micrographic work, one of its most important prizes. Finally, the United States government is now equipping at the Watertown Arsenal a micrographic laboratory, which, in connection with their physical testing, will doubtless prove of great value.

The microscopical examination of metals, therefore, may well be said to have emerged from its period of infancy. Its general adoption, however, both by producers and consumers will probably proceed slowly. The time when the practical and conservative millman looked upon the chemical analysis of iron as a laboratory feat of no direct value to him is still in the memory of many. The chemist had to fight his way against a great deal of opposition and since history will repeat itself, so it must be with the microscopist. Like his predecessor, however, he will eventually conquer.

Professor Martens has truly said ". . . that microscopic metallography can be raised to the same level in metallurgy that chemistry now occupies . . . no one can doubt who himself has carried on these researches, or even has had the opportunity to study a good collection of metal-sections."

Mr. J. E. Stead, the well-known English metallurgist and chemist, expresses himself as follows: ". . . The careful and continued study of the microstructure of metals will eventually result in obtaining much valuable scientific knowledge and practical information. It is my belief that before long every important metallurgical and engineering establishment will include in its staff some person who will be qualified to make microscopic investigations, and which will be provided with the necessary simple appliances for such work."

Similar views have been expressed by many careful and competent observers and are now shared, I believe, by the majority of those engineers and metallurgists who have kept in touch with the development of these researches.

As an instrument of research which will help us (indeed which has already done much) in solving the so-called mysteries which still surround the metallurgy of steel, the value of the microscope could hardly be overestimated. Its practical value can best be appreciated by recalling the failures and shortcomings of chemical analysis.

After the doors of metallurgical establishments had been reluctantly opened to the chemists, an abrupt change of opinion took place and it was thought that from the ultimate composition of the metal it would be possible to foretell with certainty its physical properties. The producer expected that by regulating the chemical composition with great care he would be able to turn out a product of uniform properties and reliability. The consumer considered an approved composition as synonymous with good quality.

Such hypotheses were vitally defective and disappointment was bound to come. Cases of failures were reported where the ultimate composition was all that could be desired, and when it was found that such instances were of daily occurrence, distrust returned and thus great injustice was done to chemistry with regard to its value in connection with steel making and steel testing.

It was all due, of course, to the erroneous hypothesis that the properties of a piece of steel could be inferred from its ultimate composition, quite, if not altogether, regardless of the other factors which play important parts in producing the final result, the constitution of the finished piece.

I believe it can be said that the physical properties of steel depend upon its constitution and upon nothing else. But constitution is a word of wide significance. It means much more than mere ultimate composition. If we dissect it as applied here, we find that it embraces 1° ultimate composition, 2° proximate composition, 3° the structural arrangement of the various constituents, their relative proportion, size, shape, mode of distribution as well as the existence and mode of occurrence of all kind of mechanical defects, such as blowholes, flaws, etc. In other words the *microstructure of the metal.*

These factors all contribute to the physical and mechanical properties of the metal, and it would be hazardous to affirm that ultimate composition is the most important of them all.

To attempt to predict accurately the physical character of the metal, therefore, merely from its ultimate composition, constitutes an insoluble problem. We must first learn the value of the other variables before we can solve the equation, and, except in the case of carbon, ultimate composition is all that the chemistry of iron has so far given us. The proximate composition of the metal is a resultant of its ultimate composition and probably of its treatment (thermal and mechanical); the microstructure is a resultant of the proximate composition and of the treatment which the metal has undergone, so that to put it in an other way, the physical properties of a piece of steel, which is what the engineer wants to know, and which constitute its industrial value, depends upon:

1. Its ultimate composition.
2. The work it has received.
3. The heat treatment to which it has been subjected.

While chemical analysis informs us, with great nicety, of its ultimate composition, it throws no light whatever upon the character of the treatment to which the metal was submitted, being only able to distinguish roughly between its hardened and unhardened conditions. A piece of steel may receive a thousand different treatments and its ultimate composition remain unaltered throughout, although each treatment will modify its mechanical properties. It is precisely here where chemistry fails, that the microscope steps in and comes to our assistance very effectively, for the microstructure of steel is extremely sensitive to slight changes of treatment. The character of the treatment is always unmistakably written in the structure and is thus revealed to us, provided we have learned how to read it. The two main problems which micrographic analysis will eventually solve may be formulated as follows:

1. Being given the microstructure and the chemical composition, what will be the physical properties?

2. How will a certain treatment affect the structure of a metal of known composition; and as an important corollary, being given the microstructure and the composition, what has been the past treatment?

Such must be the goal. The obstacles in the way of a complete and always accurate solution of those problems may be very great, but they are not insurmountable, and much has already been accomplished. In making it possible to ascertain what the past treatment of the metal has been micrographic analysis gives us a piece of information of very great importance and which will explain many failures unaccounted for by chemical analysis.

Such failures are a constant source of worry and vexation to the producer, as well as to the consumer. The great engineer Sir Benjamin Baker relates a typical instance of such occurrences in the following words: "On many occasions accidents arose—a tire broke, or an axle, or a rail, and loss of life might result. Under such circumstances the directors of the company, in the present boasted state of advanced scientific knowledge, appealed to the engineers of the line with the utmost confidence to tell them the cause of the accident; and if there was one thing more humiliating to an engineer than to have to say 'I do not know,' it was to add 'and I do not know anybody who can tell me.'" He (Sir Benjamin Baker) remembered several cases in which broken rails led to the loss of life. He particularly recollected three cases, on three different lines, one on the Continent and two in Great Britain. In one case a 21-ft. rail had broken into 22 pieces. On testing the steel the tensile strength had been found to be 42 tons to the square inch and the elongation 19% in 10 in., which was equivalent to 25% in 2 in. . . . The chemical analysis was everything that could be desired—carbon and manganese, each about 0·45%; sulphur and phosphorus, about 0·08%, and silicon, 0·12%. Why did the rail break? He hoped metallurgists and physicists would continue their researches until engineers were able to tell railway directors why such things happened. He agreed with Professor Arnold as to the importance of microscopic examinations. . . . The papers (on microscopic analysis and related subjects) were not simply of a scientific nature, but were of immense practical interest to every engineer engaged in the use of steel in railways, steamboats and the like.

It would be indeed most rash to claim that the examination of the microstructure, considered jointly with the chemical composition of the failed piece, will in every case explain the failure, but it can be said confidently that it will decrease materially the number of instances where the fault cannot be located. It is a decided step forward, and will assist us in eventually striking from the metallugical vocabulary such terms as the "treachery" and the "mystery" of steel.

There is nothing mysterious in science, and if many facts seem undecipherable to us, it is simply because we are examining them by means of a defective or insufficient light, which either blurs and distorts the true structure or else resolves it but partially. Let us improve the character and the intensity of the light and the whole structure will stand forth in sharp and clear outline.

When properly correlated with the results of physical testing, micrographic analysis will tell us what is the most desirable structure for steel of a certain composition and destined to a certain purpose—and, most important of all, it will tell the manufacturer the treatment to follow in order to obtain the desired structure.

In connection with these remarks one should read again Mr. Howe's admirable dissertation on the constitution of steel in the opening chapter of his *Metallurgy of Steel.* It is prophetic and suggestive reading, and since it constitutes a very strong plea in favor of the microscopical ex-

amination of steel, a few of his remarks might profitably be quoted here, before entering upon a description of the technology of the subject.

Mr. Howe justly compares the constitution of steel to that of a crystalline rock. The analogy is indeed very great, for like a rock steel may be said to be an agglomeration of minerals. He then says: "When such a fused magna as I have described solidifies its properties will depend very greatly on the conditions under which solidification occurs and probably on other conditions now unguessed. These properties are influenced not alone by the mineral species which form during solidification, but by the shape and size of the individual crystals, by the degree of cohesion between the adjacents crytals of dissimilar minerals, and by the manner in which they are interlaced, in short, by structure. . . . The ultimate composition of a crystalline rock may indeed give us a rough idea of its physical properties. . . . But it is clear that any attempt at an accurate prediction of the physical properties of a crytalline rock from its ultimate composition must be futile. They must either be ascertained by direct test, or inferred from a study of its proximate composition, which must be determined by whatever means are available, and of the arrangement of its component minerals, the size, etc., of their individual crystals, etc. That other and now unguessed conditions profoundly alter both the mineral species and the structure of steel, as of crystalline rock, in most complex ways, is indicated by the utterly anomalous relations between the ultimate composition and the mechanical properties of steel. This anomalousness, which has puzzled so many, is readily explained by the close resemblance between the conditions of the formation of rock and of ingot, which not only shows us why we do not discover these relations, but that in all probabilities *we never can*, from ultimate composition. The lithologist who attempted to-day to deduce the mechanical properties of a granite from its ultimate compositions would be laughed at. . . . If these views be correct, then, no matter how accurate and extended our knowledge of ultimate composition, and how vast the statistics on which our inferences are based, if we attempt to predict mechanical properties from them accurately we become Metallurgical Wigginses."

NOTES ON THE ESTIMATION OF ARSENIC IN COPPER.

Written for the Engineering and Mining Journal by George L. Heath.

In the *Engineering and Mining Journal* of May 8th an excellent article from the pen of Titus Ulke is noted, which summarized the recently modified methods for the determination of arsenic in copper and cupriferous solutions. A few suggestions may be made in addition to the article quoted concerning another method, judging from the writer's experience with many varieties of copper which will be better suited to the particular class of high-grade refined metal.

The various schemes for the separation of arsenic from other metals which involve its distillation from the properly prepared copper (or solution) and the volumetric titration of the resulting distillate are to be recommended wherever the arsenic is present in notable quantity, as in anodes or tank solutions of electrolytic refineries. But the refined cathodes or any other pure copper suitable for electrical purposes should contain no more than a trace of impurity and (as Ulke also observes) very small quantities can not well be determined by titration. The quantity of reagent required to produce a perceptible color reaction might be even more than the quantity required by the minute amount of arsenic present in solution.

For accurate estimation of traces of this metal the carefully purified arsenious sulphide should be dried at 100° C. in a Gooch crucible, as some chemists recommend, or better (in the writer's opinion) transformed into pure sublimed metallic arsenic before weighing, even if the operation does require a little extra time and attention. It is the writer's purpose to describe the best method of effecting the transformation to metallic arsenic without loss.

Unless the precipitation of arsenic as arsenious sulphide is performed in a cold solution, and even under the best conditions, it is difficult to remove, with certainty, every trace of sulphur by subsequent washing. The separation of arsenic is frequently required in the course of a complete analysis of copper by the well-known methods of Hampe, or Fresenius and their modifications. Great care must then be taken to ensure the previous separation of all traces of antimony, tin, selenium, tellurium or thallium, if present. With proper precautions the weighing of minute amounts of arsenious sulphide is apparently accurate, yet a good chemist once informed the writer that he could not get strictly concordant results by this process. The writer has used and recommends the following more delicate method for the estimation of traces of arsenic:

The precipitate of arsenious sulphide and sulphur obtained in a regular analysis, or by means of one of the distillation methods, which it is not necessary to describe, is digested directly with 20 c. c. fuming nitric acid until the sulphur is dissolved and evaporated with 5 c. c. of concentrated pure sulphuric acid until white fumes arise. The acid is then cooled and diluted with about two volumes of water. A Marsh's hydrogen generator,* consisting of an 8-oz. bottle, fitted with a rubber stopper, carrying a glass-stoppered separator funnel and bent-glass tube, is prepared, and 25 grams of chemically pure zinc (granulated to pass a 20-mesh sieve and be retained by one of 30 meshes to the linear inch), are placed in the bottle and covered with water to the depth of 1 in. (2·5 cm.). To the bottle is connected a calcium chloride drying tube, and to that a piece of combustion tubing of ¼ in. (6·3 mm.) internal diameter, and about 2 ft. long. Four inches, or 10 cm., of the tube are kept at a good cherry-red heat during the evolution of gas, and the tube is surrounded at this point with a double layer of coarse brass or copper gauze to prevent overheating and sagging. The latter part of the tube is constricted in the well-known manner at three or four points, and the evolution of hydrogen gas, which is started by sulphuric acid (diluted with an equal volume of water and one drop of platinic chloride), is maintained at such a slow, uniform rate that the burning jet of hydrogen at the end is only ⅛ in. (3 mm.) high.

After lighting the tell-tale jet, introduce gradually the solution to be tested, after first mixing it with a solution of chloride of tin, made by dissolving 0·5 gram chemically pure tin foil in strong acid. After the solution is introduced, which requires about one and one-half hours, the last traces of arsenuretted hydrogen may be driven forward by adding portions of the dilute sulphuric acid through the funnel until nearly all the zinc is dissolved, which will take about one-half hour longer. Then cool the tube, cut off the short portion containing the film of pure arsenic, weigh it and repeat the weighing after dissolving or volatilizing the film.

Considerable doubt was formerly cast upon the quantitative estimation of arsenic by evolution as arsenuretted hydrogen by well-known authorities,* but F. W. Schmidt† has shown that the addition of chloride of tin with the arsenide solution in the Marsh's generator renders the evolution of hydrogen arsenic complete, provided also the zinc is not used in sticks, but finely granulated or powdered.

The writer has proved Schmidt's conclusions correct (at least for small amounts of arsenic, under six mgrms) by comparative tests on copper, including the weighing of arsenic as the sulphide by another chemist; also by the following experiments with standard solutions made by dissolving weighed quantities of chemically pure arsenious anhydride (75·7% arsenic), in fuming nitric acid and evaporating with 5 c. c. of sulphuric acid until the nitric was removed. The solution was then tested in the evolution apparatus in the manner outlined.

	Arsenic, grams.		Arsenic, gram.
(a) No tin salt; 25 grams (c. p.) zinc containing	0.00040	(b) 0·5 gr. (c. p.) tin as chloride and 25 grams zinc (blank) containing	0.0004
Arsenic taken	0.00495	Solution tested	0.0057
" total	0.00535		
" found	0.0049 +	Total	0.0061
		Arsenic found	0.0061
Difference (8%) retained by zinc when tin was not added	0.0004 +	Difference held by zinc	0.0000

The above process requires two hours of personal attention, but no filters or felts have to be prepared and weighed, nor sulphur extracted from a sulphide percipitate.

The separation and weighing of arsenic as metallic film is recommended as a preferable alternative method for the estimation of the minute amounts of arsenic in any selected refined copper, or for the positive identification of traces of the metal.

Coal in Jamaica.—English papers report that coal has been found near Houghton Court, in the island of Jamaica, and the deposit is to be explored.

Coal Exports from Great Britain.—During May the exports of coal, coke, cinders and fuel from the United Kingdom reached a total of 3,502,240 tons, compared with 3,107,896 tons in May, 1896, and 3,112,206 tons in May, 1895. The shipments of coal during the first five months of the current year were 14,312,954 tons compared with 13,330.322 tons in the corresponding period of 1896, and 12,086,255 tons in the first five months of 1895. The average value given this year was $2.14 per ton, against $2.15 in 1896, and $2.31 in 1895.

A Great Austrian Concern.—The Alpine-Montangesellschaft in Austria, says the London *Iron and Coal Trades Review*, is really a federation of the chief works in Styria and Carinthia, and it has grown in importance and influence since it was founded, nearly 20 years ago, until it now employs 15,732 hands—of whom 417 are women and 507 children—and produced in 1896, 380,000 tons of brown coal, 166.000 tons of iron ore, 252,000 tons of pig, and 134,069 tons of half and wholly manufactured iron and steel. Ten works owned by the Gesellschaft produce pig-iron, three produce Bessemer steel, and four produce open-hearth steel. The total output of both descriptions was in metric tons: In 1896 44,992 tons Bessemer and 121,472 tons open hearth. More than 29% of the total output of pig is manufactured with charcoal fuel, while brown coal is chiefly used for the remainder.

The Keith Mercurio-Cyanide Process.—Arrangements have been made to use Dr. Keith's mercurio-cyanide process at the Pestarena gold mines, in Val Anzaca, Italy. We gave a short account of this process in our issue of April 17th last. The Pestarena mines have been worked by John Taylor & Sons, of London, for nearly 30 years, and the production during recent years has been about 600 oz. of gold per month. The average extraction has been 1 oz. 8 dwts. per ton, or about 88% of the assay value. The plant employed consists of arrastras. The tailings have lately been concentrated, but owing to the large amount of arsenical pyrites present no process has hitherto been successful in their treatment and they have been allowed to accumulate. Dr. Keith's process has been tried on them for some time on a practical scale, and under the conditions available has shown, it is said, good results.

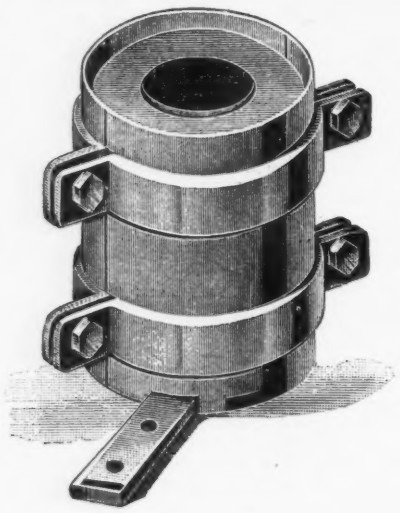
Selling Gas for Fuel.—At the recent annual meeting of the Western Gas Association in Cincinnati, Mr. I. C. Capley, of Aurora, Ill., read a paper on "Selling Gas," from which we take the following: "The sale of gas for fuel offers the greatest possibilities for immediate development. There are very few cities embraced in the territory covered by this association in which the gas companies are not able to produce a fuel that will compete in efficiency, convenience, economy and general utility with any other agent that can be used in the kitchen. There are all kinds of ways of bringing this to the attention of the public; probably the best way is to allow the purchaser an actual trial of its merits. The opportunity of developing the sale of any amount of gas for power should be important, but, in most instances, seems very difficult. But the same principle must necessarily apply. The convenience and economy of the power user must be considered, and whenever we can demonstrate that we have a better power or a cheaper power than any other, the field for the sale of gas for power will be greatly extended in all of our manufacturing cities."

* See Fresenius' *Quantitative Analysis*, Second American Edition, page 782.

* Fresenius, *Lehrbuch der Quantitativen Analyse*, 1, p. 641.
† *Journal of Analytical and Applied Chemistry*, July, 1892, p. 408, from *Zeitschrift Anorganische Chemie*.

AN ELECTRIC FURNACE FOR THE LABORATORY.

The accompanying engraving shows an electric furnace for laboratory use devised by MM. Bonna and Lekoyer and used by them in the electrical laboratory of the college at Geneva in Switzerland. It is intended to avoid certain inconveniences which have been found in the small electric furnaces heretofore used. This furnace, says *Le Genie Civil*, is composed of a metallic cylinder divided into two parts, which are held together by two bands furnished with lugs and bolts, as shown in the engraving. The bottom of the cylinder is formed by a plate of metal, to which is soldered a copper bar through which the current is passed. This cylinder serves as an envelope for the crucible, which is of the best quality of graphite, and rests on a bed of bone-charcoal mixed with about a quarter of its weight of sugar, placed at the bottom of the cylinder. Under the action of a moderate heat the powdered mass becomes soft and expands, exercising great pressure on the crucible and the protecting cylinder; a higher temperature hardens it completely. The bone-charcoal being a good conductor, the arrangement secures the easy passage of the current from the copper bar at the bottom to the crucible. Above the interval between the crucible and the protecting cylinder is packed with a mixture of powdered wood charcoal and filtered molasses. The furnace has the advantages that a complete insulation for the electric current is obtained, and also a protection against loss of heat. At the some time the crucible can easily be taken. to examine its contents, and then replaced if desired. MM. Bonna and Lekover have tried this device and recommend it for use wherever an electric furnace is needed in the laboratory.



A SMALL ELECTRIC FURNACE.

Quicksilver in Croatia.—It is reported from Agram, Croatia, that in a mine at Trstjn quicksilver ore has been found which can be profitably worked. It is added that a London company has already purchased the mine.

Copper Working in Ancient Egypt.—Recent new researches by M. Berthelot on "Tools and Weapons of the Copper Age in Egypt, their Methods and Manufacture" formed the subject of a paper read at a meeting of the Paris Academy of Sciences. The objects described belong to most ancient Egyptian times, and consist of practically pure copper, no tin being present in any case. A careful examination of some copper needles, found in a tomb at Abydos by M. Amelineau, showed that they had been prepared from a thin lamina of metal, by folding over and subsequent forging. A small chisel obtained from the same place was found to have been made in a very similar manner. A hollow needle was formed from thin copper leaf, in a manner very similar to that employed at the present time in the manufacture of helical tubing for bicycles.

The Russian Petroleum Trade.—The recent report of Consul Stevens to the British foreign office says that a decrease is shown by the official figures in the shipments of oil from Batoum during the year 1896, as compared with those of 1895 as follows: Crude and crude residuum, 12,429 tons; of lubricating oils, 32,561 tons; of illuminating distillate, 37,149 tons; and of refined illuminating oils, 204,405 tons; constituting a total decrease in shipments for the year 1896 of 286,544 tons.

At the opening of the year 1896 the Baku oil industry had to face a most unfortunate combination of circumstances, for although a greater demand for Russian kerosene at advanced prices existed in foreign markets, the dispatch of the produce of the wells at Baku in anything like large quantities was rendered impossible in consequence of the breakdown of the railway, which, totally suspended in November and December, 1895, was during the first three months of the following year only able to resume traffic between intervals of interruption of more or less prolonged duration. The construction of two temporary pipe lines of 4-in. and 3-in. diameter over that section of the line that had suffered most severely, and the dispatch of naphtha products from Baku by sea to Petrovsk, and thence by rail to Novorossisk for shipment, alleviated matters to a certain extent; but the difficulties experienced in pumping the oil through pipes of such small dimensions, hurriedly put together, and with imperfect pumping machinery and other appliances in the first instance, and a lack of rolling-stock in the shape of tank cars and storage reservoirs in the second, rendered it impossible to transport to the seaboard anything like the quantity of oil required to meet the enhanced demand from abroad.

THE FORTUNA GOLD MINE, ARIZONA.

Written for the Engineering and Mining Journal by Wm. P. Blake.

The Fortuna gold mine is a prominent example of the successful result of intelligent enterprise in mining. Purchased and worked upon its merits alone, and for its yield of gold, it has made a large return to its owner, Mr. C. D. Lane, the well-known gold miner of Angel's Camp, California. The mine and the mill of the Fortuna Company are situated in Yuma County, Arizona, about 13 miles south of Blaisdell Station, on the Southern Pacific Railway and about 30 miles in a southeasterly direction from Yuma City.

The vein crops out in one of the lower ridges of the rocky range of mountains extending southeasterly from the Gila River toward Sonora. This range is the westernmost of the series of mountain ridges cut through by the Gila Valley and crossed by the railway. It is known as the Gila Range on some of the older maps. It is on the line of northward prolongation of the gold-bearing mountain ranges of northern Sonora. From the western base of this Gila Range the ground slopes gradually away in a broad plain without water or human habitation down to the shore of the Gulf of California.

Geologically these mountains are built up of granite, and a vast series of very ancient rocks of sedimentary or mechanical origin, but now crystalline through metamorphosing agencies and in the condition of compact gneiss, mica slate, hornblende slate and quartzite. They are pre-Cambrian in age—the Arizonian formation, but possibly Huronian in part. In this locality it is remarkable for its great thickness, regularity of bedding and fine lamination without flexures or contortions of the layers which remain tabular over great areas, although the strata are uplifted at an angle of about 45°, and dip southwestward with great regularity. The thickness is not less than 10,000 ft. without, so far as could be seen, any evidence of duplication of the beds by faulting. The surface is black, and there is little soil and no vegetation to hide the rocks. There are very few indications of any mineral veins. Aside from a few cross-dikes of granite nothing in the nature of a continuous vein is visible. It is a forbidding field for the prospector, particularly as the sources of water are few and far between.

But at the base of this mountain range of ancient slates the Fortuna was located and is now worked successfully to a depth of over 450 ft. The outcrop of quartz was comparatively insignificant and obscure and was regarded of no special value by those who passed by it on the road to California from Sonora. Thousands of experienced miners of Sonora must have passed this outcrop on their way in 1848 to the newly discovered placers of California.

This outcrop extends for a distance of only 10 or 12 ft., and it is thus difficult to determine its direction of trend or strike, but it appears to be conformable to the slates and to trend with them northwest and southeast and to dip southwestwardly. Some miners would call this outcrop a "blow-out." It is the top of a chimney-like chute of ore, extending irregularly downward. It probably does not measure more than 100 ft. horizontally on the line of the drifts, but its great extension downward has been proved, and it has been yielding and continues to yield large quantities of gold.

The quartz is without lamination or ribbon structure. It carries the gold throughout its substance in little grains, or particles, which amalgamate freely, and are saved in battery and on plates. It is a free-milling ore. A little green stain here and there indicates the presence of some copper ore, and copper was found in the bullion in more abundance in the upper level than below, where there has been less decomposition of the sulphides.

The gold is very fine and high grade, averaging ·890 fine, and gives a pure, clean bullion. The bars are poured of large size and great weight, for greater security in transportation. They weigh usually from 150 to 250 lbs.

The mill of 20 stamps at the mine works about 80 tons daily, or four tons to each stamp, weighing 1,350 lbs. each. The gold is caught in the battery and on plates. The battery is lined with corrugated steel plates, forming a series of shelf-like projections, or narrow troughs, into which the amalgam is splashed and accumulates, thus removing it from the continued wearing attrition of the stamps.

The silvered aprons are 50 ft. long, with a slope of about 1 in 8. After passing these the flow of pulp is concentrated in a long board sluice or flume which serves as a gleaner, and is cleaned up occasionally. No form of concentrator or other method of amalgamation than the plates and sluice is employed.

The average yield per month is now stated to be about $80,000 in value. This has been exceeded occasionally. For the first four months' run of the mill the yield was as follows: Ore crushed per day, 52½ tons; assay value of the ore per ton, $40; amount saved in the mill per ton, $35; value of tailings per ton, $5; total ore crushed in four months, 6,300 tons; total amount saved in gold bullion, $220,500; average production per month, $55,000.

This chimney-like lode appears to have reached the surface at more than one point, for a branch or feeder has been found below entering or uniting with the main lode at a depth of about 250 ft. on the footwall side. This branch or connection formed the union with the main chimney in the shape of the letter V. According to the opinion or theory of the engineer, Mr. Ed. B. Wiggin, the lower portion of the wedge-shaped mass of rock between the two parts of the lode, or fissure, being unsupported, fell down and closed the main opening in part, and in such a way as to make a mass of broken ground at the intersection, in fact a "horse" of barren rock, which for a time seemed to indicate the giving out of the lode. But patient sinking through the rock reached the lode below it, and this part of the lode was found to be even larger and better than the portion above the horse. There are indications upon the surface of a second underlying branch vein.

The mine is opened by an incline shaft, sunk perpendicularly to the plane of the lode and crosscuts are driven over to the lode at the different levels. A vertical shaft to be 700 ft. in depth to the intersection of the lode is now contemplated.

The water for the mill and settlement is all pumped from the bottom land of the Gila River, 12 miles from the mine. A well has been sunk and a pumping plant erected there. The elevation to be overcome is 750

ft. The pipe, laid just below the surface of the soil, is 4-in. oil-well casing. The pressure, while the pump is running, is about 550 lbs. per square inch. Much trouble is caused by a peculiar corrosion of the pipe by the water on the lower side. Conical holes are eaten through, which are rapidly enlarged by the escaping water. The only remedy, so far, is to turn the pipes partly over, thus prolonging their usefulness without removing the cause of the corrosion, which is probably the presence of chlorides in the water.

This peculiar lode is another satisfactory example of the money value of well-defined ore-chutes or chimneys of pay ore and of their persistence in depth while of limited superficial extent.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

(Specially Reported for the Engineering and Mining Journal.)

FAILURE TO RESIST MOB NOT NEGLIGENCE OF COMPANY.—A coal company is not guilty of negligence in the preservation of its property, which will prevent recovery from the municipality for the destruction of such property by a mob, because of the failure of three or four of its employees in charge of such property to resist a mob of several hundred by firing into it and taking human life, where they acted as ordinarily careful and prudent men would have been expected to act under the circumstances.—Spring Valley Coal Company vs. Spring Valley (65 Illinois Appellate Court Reporter, 571); Illinois Appellate Court.

CONVERSION OF ORES BY MINING COMPANY.—Under the rule that, when a trespasser enters on a vein to which he has no title, and takes ore from it, he may limit the owner's recovery, in an action for the ore taken, by showing the value of such ore and the actual cost of digging that particular ore from that particular vein, tramming it to the shaft, and hoisting it to the surface, the good faith of such party, the value of the ore, and the actual cost of its extraction are questions to be determined by the jury, although the testimony on behalf of the trespasser on these points is uncontradicted. Where it appears that such ore was mingled with other ores, so that the one claiming damages was entirely unable to separate it, the trespasser must show how much was wrongfully taken, or the other may recover the value of all the ore shown by his own evidence to have been taken out.—St. Clair vs. Cash Gold Mining Company (47 Pacific Reporter, 466); Court of Appeals of Colorado.

NEW WORK IN THE VILLA RICA DISTRICT, GEORGIA.

Written for the Engineering and Mining Journal by W. M. Brewer.

In this district systematic prospecting work has been commenced at four properties not before mentioned. These are on lot 193 by Mr. Weimland for a Chicago syndicate; the Willoughby property by Mr. Maryatt for an English syndicate; on an adjoining property by Mr. Roach for some of the stockholders of the Ducktown Copper and Sulphur Company, of Tennessee, and by Mr. Rainey at the old Hart mines for a Wisconsin syndicate. The work has not gone sufficiently far on any of these properties to determine their values as mines. At another point about four miles southerly from the town of Villa Rica, a St. Louis syndicate is prospecting on the Cobb farm and milling a limited quantity of material from near the surface, consisting of the decomposed formation and quartz taken from a shaft about 30 ft. deep at the head of a trough which had been worked by placer miners years ago. The mill is of a new pattern made in St. Louis and constructed without any device for amalgamating except on a stationary plate. The crushing is done by a series of small hammers which revolve on a horizontal shaft, encased in a casting, the entire machine occupying a space of some 6 cu. ft. The crushed material drops on a screen, through which the finer pulp passes, while the coarser is discharged as waste. From the screen the finer pulp passes over mercurialized electroplated copper-plates, thence to sluice boxes. This machine has not been run long enough to enable a visitor to form any opinion as to the results of its work.

Work is being prosecuted at the Mineral Farm mine, the shaft having been carried down about 146 ft., at this point it is proposed to crosscut the ore body, and it is the purpose to install machinery for air drills to run the crosscutting and drifting. This ore is a pyrrhotite and iron pyrites, the valve of which, either in copper or gold, I am not informed. The walls are apparently an altered eruptive rock and the gangue quartz.

Near Bremen, about 10 miles west from Villa Rica, some shallow prospecting has been done in a formation very similar to that at the Mineral Farm mine. A body of iron pyrites and pyrrhotite has been cut in two or three places, and I am informed some samples assayed as high as 9% copper. In this vicinity there are several old openings made years ago. Some of these shafts are said to be 80 ft. deep, but they are full of water, so that little can be said beyond the fact that the outcroppings can be traced for a considerable distance by the gossan on the surface. It is proposed by local men to prospect this lead quite extensively, on the assumption that it is a northeastern extension of the Wood's copper mine in Alabama and the southeastern extension of the Mineral Farm mine, north of Villa Rica.

At the Royal mine, near Tallapoosa, the mills are shut down, but the work of drifting on the ore body at the 105-ft. level is going on. Two air drills are in use, and the drift is about 30 ft. in either direction from the station. The ore body encountered at 105 ft. is so far continuous, and the same character of white quartz carrying cubes of pyrites. Mr. Bowron, the chemist, informs me the average value was about $5 per ton in gold. A cage is being put in place, on which ore cars will be hoisted to a sufficient height to run by gravity on a trestle to the roof of the mill, and there dump on the crusher floor, where an additional crusher is to be set in place. On the 75-ft. or upper level, a drift has been run parallel to the old workings, and crosscuts from which the ore has been mined show that the entire vein material, consisting of decomposed quartz, feldspar and pyrites is at least 35 ft. thick. What proportion of this carries values, or whether the entire body yields pay, are questions I am unable to answer. In erecting the buildings for the milling machinery one great error was made by locating them on the hanging wall of the vein, and consequently a quantity of ore will necessarily have to be left in the mine to prevent caving and hold up the walls.

A NEW JERSEY CLAY, OCHER AND IRON ORE DEPOSIT.

Written for the Engineering and Mining Journal by Matthew Penhale.

At Beattystown, in Warren County, New Jersey, there is a group of valuable iron mines which I was concerned in working 25 years ago. There were three mines in this group. The Thomas mine, on the Shields property, was leased and worked by the Thomas Iron Company. The Shields mine was worked by the Musconetcong Iron Company, which used the ore in its furnace at Stanhope. The third was the Brown mine, on the Brown farm, which was worked first by the Bolton Company, and later by the Wharton Iron Company, of Philadelphia. From these mines there was taken out a large quantity of good hematite ore which would go 50% iron in the furnace. This was used with the high phosphorus ores from the Ogden mine and the Ford mine, which carry a high percentage of iron, but required a proportion of the Beattystown ores to work well in the furnace. With this mixture a large quantity of foundry iron, chiefly No. 1, was made in the Stanhope furnace.

These mines were worked entirely by stripping and open cutting, but enough was done to show that the Shields and the Brown mines are connected by a strong vein of hard ore from 50 to 75 ft. wide, running the entire length of the property. When opened a breast of ore was shown from the stripping down. In the old workings the miners took out the wash ore, which was there in large quantities, but did not go down on the vein. This vein lies on the limestone, dipping to the south, and my observations have satisfied me that it is strong and well defined enough to warrant underground mining.

None of these mines have been worked regularly since 1879 and the old open pits are now partly filled up with clay and dirt, which has washed in from the surface. The location of these mines is good; they are about 50 miles from tidewater at Jersey City or Hoboken and about 30 miles from Phillipsburg and Easton, Pa. A short railroad, which could be built at a moderate cost, would connect them with the Hacketts-town Furnace and the Delaware, Lackawanna & Western Railroad near that place.

The ochers—including yellow ocher, umber and siena—are probably worth as much as the iron ore in this property. In the old workings these were not considered, and were washed away in the ore washers. The mud dams on the Brown property, into which the waste water was run, are full of these ochers. At one time their value was recognized, and in 1886 a Philadelphia company made arrangements to lease and work the property for the ocher, of which abundance could be obtained from the mine, as well as from the dams. Careful examination made at this time showed the value of these minerals. For various reasons the plan was abandoned.

Finally, on a recent examination, made by me with Mr. La Bar, the owner of the Shields mine, the discovery was made of a deposit of clay excellently adapted for the manufacture of terra cotta. This is on what is called the slate ridge of the Brown farm, on one side of the iron ore body to the north of it, as the limestone forms its southern boundary. A comparison of this clay with that used by the Terra Cotta Works at Port Murray, N. J., proves that the Beattystown clay is of excellent quality, while the deposit is shown by the preliminary examination to be extensive. It is of various colors, and is well situated for mining and shipping. This discovery has caused some excitement locally, and search is being made for clay banks all over the neighborhood. It is understood that arrangements have been made to work this property soon.

Spanish Imports and Exports.—For the four months ending April 30th, the *Revista Minera* reports that Spain imported 559,210 metric tons of coal and 101,477 tons of coke, an increase of over 10% in both cases. Other imports included 661 tons pig iron, 5,247 tons bar and other iron, 8,183 tons steel and 228 tons tinplates. Exports of minerals for the four months were, in metric tons:

	1896.	1897.
Iron ores	2,183,622	2,380,334
Copper ores	212,376	265,302
Zinc ores	9,715	10,436
Lead ores	2,389	2,287
Salt	100,625	75,402

Exports of metals included 14,104 tons of pig iron, an increase of 7,267 tons; 13,783 tons copper, an increase of 4,110 tons; 54,072 tons lead, an increase of 4,352 tons, as compared with last year.

A Simple Conveyor.—The London *Engineer* describes a simple conveyor for short distances, put up by Mr. Charles Thompson, at Grantham, England. It consists of a long, shallow trough, made of board, which is carried free to slide longitudinally on wooden rollers, supported in brackets from the ceiling or roof, and has an inclination from the horizontal of 1 in 10. This trough is provided at suitable intervals with either drop doors or side slides, and is caused to reciprocate by a cranked shaft and connecting rods. The conveyor noted is 24 in. wide, and loads 1½ in. deep, having a 4-in. throw, effected by 2-in cranks, making 120 revolutions per minute. The apparatus in use at Grantham has been working for a considerable period with no noise except the slight rumbling of the rollers, and no perceptible vibration, while the wear and tear has been practically very small. The material is impelled by the throw of the crank, and the momentum it acquires keeps it continually on the move during the rearward movements of the conveyor, the resistance to which is simply the friction of the material, which is extremely slight, owing to the highly-polished surfaces presented to it by the boards, so that a continuous feed results. At Grantham it is used for carrying grain to a screen; for conveying minerals and other similar substances Mr. Thompson has devised a conveyor with a system of steps like the teeth of a ratchet, so that the material can be propelled either on the horizontal or, if necessary, up a slight incline.

PERSONAL.

MR. H. A. KELLER passed several days last week in and around Salt Lake, going from there to Montana.

MR. G. W. SMALL, of Idaho Springs, Colo., has just returned from an examination of mining property in Mexico.

MR. C. G. TITSWORTH, of Denver, Colo., has been appointed assistant superintendent of the Anaconda mine, at Butte, Mont.

MR. NEVIN MCCONNELL, superintendent of the open-hearth department of the Homestead Steel Works, Pa., has gone to Europe.

MR. SAMUEL NEWHOUSE devoted ten days to his mining interests in Utah and Wyoming, returning to Denver Tuesday of this week.

MR. T. E SCHWARZ, mining engineer, of Denver, Colo., has been engaged in professional work at Leadville during the past few weeks.

MR. A. D. HODGES, of Boston, is making a thorough test of the large ore body opened up in La Cigale mine, in the West Dip portion of Camp Floyd, Utah.

PROF. W. P. BLAKE, director of the Arizona School of Mines, Tucson, will spend his vacation at his summer residence, Mill Rock, New Haven, Conn.

MR. C. M. ROLKER was welcomed in Salt Lake the other day by old Leadville friends and others. He is now in Montana and may extend his trip to Idaho.

MR. SOL. HAAS, president of the Sloss Iron and Steel Company, of Birmingham, Ala., recently spent a few days in New York City on business connected with the company.

MR. E P. JENNINGS, the economic geologist of Florence, Wis., is conducting an extensive examination in the Rainy Lake region, Ontario, for a Wisconsin syndicate.

MR. CHARLES L. POOL, of Duluth, Minn., a member of the Crown Hill Mining Company, is at the company's property at Crown Hill, Ragged Top District, So. Dak.

MR. S. R. WHARTON, one of the principal owners of the Cliff mine of Rossland and the Reco of Slocan, B. C., has been visiting Atlanta, Ga., and other Eastern points.

MR. W. W. ORR, the well-known metallurgist, of Salt Lake City, has returned from Nevada, where he had been making tests on ores belonging to Nebraska and Salt Lake parties.

MR. A. T. SMITH, of Hartford, Conn , President of the Delano Chlorination Works Company, of Boulder, Colo., is in that city, watching the operations of the new process employed.

MR. GEORGE PFUNDER, one of the principal owners of the Colonna of Rossland, B. C., and a prominent mining man of Trail Creek, has been on an extended visit to the Eastern States and provinces.

MR. FRED F. FISCHER, of Chicago, until recently chief engineer and head salesman of the steam department of the Gates Iron Works, has withdrawn from this company and intends to enter business on his own account.

MR. WALTER H. WILEY, of Idaho Springs, Colo., who recently began an examination of the mining field south of Elko, Nev., has also been selected to examine mines in the same State for the Anaconda Company, of Montana.

MR. H. B. MILLER, Superintendent of the Du quesne Steel Works and furnaces of the Carnegie Steel Company, will soon leave for a European trip. In his absence MR. JOSEPH E. SCHWAB, recently appointed assistant general superintendent, will be in charge.

PROF. FRANK H. CONSTANT, formerly with the King Bridge Company, of Cleveland, O., in the designing and estimating department, has been made professor of structural engineering in the University of Minnesota. He is a graduate of the University of Cincinnati.

MR. JEREMIAH HEAD, the well-known English engineer, and his son, MR. ARCHIBALD P. HEAD, are spending the month of June at the Otis Steel Company's plant, Cleveland, O., Mr. Head representing the English owners as consulting engineer in the supervision of the changes now being made at the plant.

MR. ALLEN C. WASHINGTON, president of the Horn Silver Company, accompanied by MESSRS. ANSON, PHELPS, STOKES and others, left New York June 14th for Eastern Nevada, going first to Austin. From there they go south by wagon. Their itinerary includes De Lamar, thence to State Line, the new Utah gold district, afterward striking the railroad again at the Horn Silver mine, Frisco, Beaver County.

OBITUARY.

GEORGE H. SELLERS, civil engineer and inventor, of Wilmington, Del., died recently, aged 65 years. He was badly injured a few weeks ago by an explosion of a gas tank in Philadelphia, Pa., while making some experiments, which caused his death. He was general manager of the Edge Moor Iron Works for a number of years.

ALEXANDER CAMPBELL died recently at the Barrero del Palomar mines, Cañazas Dept. de Veraguas, Panama, Republic de Colombia, aged 50 years He was for some years connected, with the late Douglass Crawford, editor of the Panama *Star & Herald*, in the Santa Rita mine, near Colon. The deceased leaves a married sister in California.

JOHN EUDY died June 15th, at Henderson, N. C., aged 79 years. He was born in Cornwall, England, and worked in the tin mines there. He came to America and afterward became superintendent of the Friedensville, Pa., zinc works. Mr. Eudy was for 40 years connected with the Osgoods, New York capitalists, who were extensive operators of mines in the United States. For some time he had charge of their gold mines in North Carolina, and later was superintendent of a lead mine in New York State. Twenty years ago he went to Friedensville to take charge of the old Correll mine. Four years ago he resigned his position and has since lived in retirement in North Carolina.

J. M. MARSHALL, a pioneer miner of Colorado, died in Denver on June 13th, aged 74 years. Mr. Marshall was one of the best and most favorably known old-timers in the State. His early years were spent in mining at Galena, Ill., from which place he moved to Minnesota. He went to Colorado in 1860 and started the first iron foundry in the territory, in Denver. A year afterward it was moved to Black Hawk, where Mr. Marshall and John W. Nesmith, of the Colorado Iron Works, began building the first stamp mills built in Colorado. The present splendid Colorado Iron Works are the result of that small primitive plant. Mr, Marshall located the Marshall coal banks of Boulder County, and there also started the first iron furnace and produced the first iron in the Rocky Mountains. He sold the coal mines in 1885, since which time he has lived in Denver, a portion of the time being occupied in public ore sampling.

SOCIETIES AND TECHNICAL SCHOOLS.

ENGINEERS' CLUB OF PHILADELPHIA, PA.—The meeting of this club on June 5th was the last before the summer recess, and the first fall meeting will be held September 18th, 1897.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA, PITTSBURG.—The regular meeting was held June 15th. The paper of the evening, entitled "Steel Roofs of Mill Buildings," was read by Mr. A. E. Duckham. There was considerable discussion and some very interesting points were brought out. Arrangements were made by the reception committee for the annual summer excursion of the members of the society.

CIVIL ENGINEERS' CLUB OF CLEVELAND, O.—A meeting was held June 8th. Mr. Charles W. Hopkinson presented the paper of the evening, entitled "The Philosophy of Architecture," which was considered under the following heads: (1) The Philosophical Development of the Desires of a People for Structures. (2) The Intimate Relation of a People to the Resulting Architecture. (3) The Development of the Actual Problem between Client and Architect—(a) The Study of the Essentials of the Problem; (b) The Philosophical Solution of the Plan; (c) The Rational Development of the Structure; (d) The Appropriate and Logical Growth of the Design as a Whole.

KOOTENAY MINING PROTECTIVE ASSOCIATION.—The first regular quarterly meeting of this body was held June 14th at Rossland. Mr. Henry E. Croasdale, manager of the Hall mines, and president of the association, occupied the chair. There was a representative attendance, and as the association has been formed for the purpose of protecting the interests of the mineral industry of Kootenay, the subjects chiefly discussed were the timber tax in relation to the mining industry, the recent amendments to the Provincial mining laws, the question of duty on machinery for mining purposes and the manufacture of blasting powder for mining in Kootenay, and that of an export duty on ores. A resolution was agreed upon to the effect that if capitalists would locate powder works in Kootenay the association would give the project the fullest support. Strong remonstrances were made against the tax on timber and cordwood, and a resolution condemning the tax was also passed.

CALIFORNIA STATE MINERS' ASSOCIATION.—At a meeting of the executive committee the following delegates were chosen to attend the gold mining convention, which meets in Denver July 7th: T. L. Ford, H. E. Picket, J. D. Mather and S. W. Cheney, and one other delegate yet to be named. For the Trans-Mississippi Congress at Salt Lake, July 17th, the following delegates were chosen: T. L. Ford, H. E. Picket, J. D. Mather, D. T. Cole, J. J. Crawford, Louis Glass, Samuel W. Cheyney, M. B. Kerr, Julian Sonntag and W. S. Keyes. A committee of five, consisting of W. W. Montague, T. L. Ford, Louis Glass, W. F. Prisk and James Bryan was appointed to confer with the State Dredge Commission and Governor Budd in regard to the purchase of a dredge costing about $100,000 for the Sacramento River. A like committee, it was announced, will be appointed by the people of the Sacramento valley, and a conference with this committee was also recommended. It was stated that the trouble over the You Bet and other mines would probably be amicably settled soon. Mr. Neff was made an ex-officio member of the first-named committee.

OHIO INSTITUTE OF MINING ENGINEERS.—The summer meeting of this institute was held June 15th to 18th. The institute had invited the members of the Western Pennsylvania Central Mining Institute to accompany them, and they responded to the number of 23. There were 90 members of the Ohio Institute and 21 ladies also of the party, the total being 134. The party went from Columbus to the docks of the Short Line Railroad on Sandusky Bay, where they examined the old methods of loading vessels with buckets and cranes, and inspected the interior arrangements of the whale-back vessels used in the Lake trade. They also saw the Thornburgh rapid loader now in course of construction.

The party next went to the Baltimore & Ohio docks, where vessels were being loaded by buckets and cranes. Here also, on invitation from the elevator people, the party witnessed the rapid transit method of handling grain, whereby through the use of an endless belt some 7,000 bu. of wheat are moved per hour. The wheat is carried on the flat belt at a very rapid rate without spilling, and when the turn of the belt is reached it leaves the belt and pours into the funnel without the loss of a single grain.

Wednesday morning the excursionists again boarded the *Maud Preston* for Huron. Just outside the bay, near Cedar Point, a breakwater was built last year, and Lake Erie in a few months washed away some 40 ft. of valuable land of the peninsula. The result is a big suit for damages against the government. Experts are unable to explain the action of the lake at Cedar Point if the breakwater is not the cause of it.

The party at Huron witnessed the McMyler unloading machine there used for handling the mountains of iron ore piled up along the docks. The speed with which this work is carried on is surprising, as is also the great saving of human strength and muscle. The buckets being placed near the bottom of an ore-pile are filled with very little shoveling.

At Huron the excursionists also examined the Brown hoist for loading coal, which is said to have a guarantee of 3,000 tons. Some of the party timed the machine while it loaded 30 tons in 7 minutes and 18 seconds. But 40 seconds elapsed from the time the railroad car was taken until the coal was dumped into the six buckets ready for loading. These buckets each hold five tons.

Re-embarking, the party were taken to Lorain, where they were met and taken in charge by Mr. S. M. Smythe and others of the Johnson Company and by a large number of the members of the Engineers' Club of Cleveland and proceeded to the Johnson Steel Works, situated some 4 miles from the landing, in the open country on Black River.

The inspection of the steel works occupied most of the afternoon. The party followed their guides through the various operations of making steel rails from beginning to end. The machinery and methods are all of the latest type, and it is said that the plant can turn out 1,400 tons of steel rails a day.

After completing the inspection of the Steel Works the parties visited the site for the docks that are to be established there by the Steel Company and the proposed site for the furnace plant. Returning to the harbor, they resumed their journey by boat, arriving in Cleveland in the evening.

On Thursday morning, through the kindness of Mr. C. E. Grover, President of the Tug Association, the *Maud Preston* was towed about the river at Cleveland to various points of interest. The party first visited the Cudd-Mullen plant on the outside of the harbor, situated on the Cleveland & Pittsburg tracks. At this plant the McMyler side dump is used, but owing to the non-arrival of a vessel the plant was not in operation. They next visited the Brown hoist on the Cleveland & Pittsburg Railroad docks, located in the old river bed. This plant is the same design as the one at Huron. Then they were taken to the Long Car unloader, built by the Excelsior Iron Works, of Cleveland, and located on the Erie Railway tracks. Through the kindness of President George W. Short, the mode of operation was exhibited. It is stated that by the Long dump a car is clamped, dumped and back on the track in 21 seconds, and that only 1 minute and 35 seconds elapses from the time a car is pushed on to the machine until another takes its place. The machine can turn 40 cars an hour. Passing up the river the party were shown a machine being erected on the Valley Terminal Railroad of the McMyler pattern, in many ways similar to the Long machine, the chief difference being that under the spout a drop bucket is used which will lower the coal into vessels, thus reducing the breakage, as the spout is kept full, and the coal slides gradually to its destination without a sudden crash and fall.

After dinner, through the kindness of Mr. E. A. Handy, Chief Engineer of the Lake Shore & Michigan Southern Railroad, a special train took the excursionists to Ashtabula Harbor. There the party first examined the Brown hoist, which was engaged in loading one of Rockefeller's 4,000-ton boats. It is said that this machine can unload 118 cars in 12 hours. The party then proceeded to the Lake Shore examined the first car-unloader ever erected at the

Lake ports. It works on the cantilever principle and is said to have an unloading capacity of 16 cars an hour. It is now being used by M. A. Hanna & Company.

As some of the Pennsylvania guests were to leave the party at Cleveland an impromptu meeting of the two institutes was held there during the evening, at which resolutions were passed thanking individually the large number of people and corporations that had so generously contributed to the entertainment and instruction of the members and their guests.

On Friday morning the party left by their boat for Sandusky, where they took their train for Columbus, arriving at 8:40 Friday evening.

INDUSTRIAL NOTES.

The Duquesne (Pa.) Forge is on full time for the first time in two years.

The National Tube Works, at McKeesport, Pa., put in operation additional departments on June 21st.

The Roane Iron Company, of Rockwood, Tenn., will add another hot blast stove, 20 × 60 ft., to its furnace.

The East Lebanon, Pa., Iron Mills resumed operations June 22d in all departments. The company employs 300 skilled workmen.

The Eagle Foundry at Greensboro, N. C., recently burned, may be rebuilt, as efforts are being made to organize a $10,000 stock company.

The Markle Lead Works, of St. Louis, Mo., have been chartered by C. N. Markle, J. W. Noble and R. H. Dreyer. Capital stock is $75,000.

The Andrews & Hitchcock Iron Company's Hubbard furnace No. 1 at Hubbard, O., has been put in blast on Hubbard-Scotch foundry iron.

The Illinois Steel Company's merchant mill at Joliet, which employs 450 men, was opened last week after a shut-down of three months.

The Maryland Steel Company this week shipped 3,000 tons of steel rails to Halifax, said to be the first cargo ever shipped by it to a foreign port.

The Chamber of Commerce of Richmond, Va., is considering a proposition from William J. Payne and associates for the erection of a fuel-gas plant to cost $400,000.

The F. D. Cummer & Son Company, of Cleveland, O., reports the sale of one of its celebrated dryers to be shipped to St. Petersburg, Russia, and three to Antwerp, Belgium.

The Warner Chemical Company has been incorporated by Jay Warner, John Stromberg and S. B. Keep, with a capital of $25,000. The company will operate in Denver, Colo.

The Monterey Chemical Company has filed articles of incorporation at St. Louis, with a capital stock of $10,000. Fred P. Spraul, M. E. Milkman, G. Milkman and Henry R. Hall are the incorporators.

Macintosh, Hemphill & Company, Pittsburg, are building two 42 × 60-in. and two 50 × 60-in. engines for the new continuous sheet-bar mill of the Shenango Valley Steel Company, at New Castle, Pa.

The Cambria Iron Company's rail mill, at Johnstown, Pa., employing about 150 men, which has been closed down several months owing to a lack of orders, resumed work June 21st, with orders to run all summer.

The Fort Pitt Machine Company, Pittsburg, Pa., has applied for a charter of incorporation. The incorporators are: Jos. G. Siebeneck, Jos. Ludwig, Thomas H. Hughes, Thomas R. Hartley and H. K. Siebeneck.

The Illinois Steel Company's plant, at Bay View, Wis., is only partly employed. The puddle mill has been idle for some time. The 12-in. and 8 in. mills and the fish-plate department have been shut down since June 1st.

W. P. Snyder & Company, of Pittsburg, Pa., will lease Soho furnace, formerly operated by the Moorhead-McCleane Company, of Pittsburg, Pa., and for some years the property of the New York Life Insurance Company.

The Baldwin Locomotive Works, Philadelphia, have received an order for six locomotives for the Cape government railways of South Africa. These locomotives will be similar to those recently built by the firm for Japan.

The Burgess Steel and Iron Works, of Portsmouth, O., have ordered the erection of a 35-ton open hearth basic furnace. The Fayette Manufacturing Company of Pittsburg, Pa., will furnish the brick for lining the furnace.

The Mahoning Valley Iron Manufacturers' Association, at its recent meeting, elected the following officers: J. G. Butler, president; Myron Wick, vice-president; W. E. Taylor, treasurer; and James H. Nut, secretary, all of Youngstown, O.

The Reading (Pa.) Iron Works' finishing department, employing over 100 hands, resumed June 21st. It is likely other departments will follow, and that the majority of 1,500 men idle because of a wage reduction will soon be at work. Puddlers refuse to accept the cut.

The Schenectady (N. Y.) Locomotive Works have received an order for 12 narrow gauge passenger locomotives for the Kiusiu Railway Company, of Japan. The general design will be the regular American type with cylinders 16 in. in diameter, and with a 24-in. stroke.

The Coleman Shields Company's iron plant at Niles, O, known as the old mill, has shut down. A notice posted by the company says that the suspension is due to the inactivity of the iron trade, and that work will not be resumed for an indefinite period. All employees were discharged.

The National Galvanizing Works have been incorporated with a capital of $1,000,000 at Jersey City, N. J., to operate at Versailles, Pa., a plant for galvanizing. The incorporators are: Edmund R. Converse, New York City; Joseph Claudet, New Rochelle, N. Y., and Wm. C. Curtis, Summit, N. J.

The Belle City Malleable Iron Company, Racine, Wis., has added a 12-ton open-hearth melting furnace to its plant, increasing its capacity to three times the former output. The company also contemplates the erection of an additional foundry, giving enough floor room for 50 more molders. The plant now employs over 200 men.

Both the Edgar Thomson and the Homestead Steel Works of the Carnegie Steel Company, near Pittsburg, Pa., resumed June 20th, all departments running full. The Duquesne Steel Works, which have been manufacturing billets, began on rails. Enough orders are said to be on hand to keep these plants working the greater part of the year.

The Burden Iron Company, Troy, N. Y., held a stockholders' meeting on June 16th and elected the following trustees: James A. Burden, I. Townsend Burden, John L. Arts, James A. Burden, Jr., and Nicholas J. Gable. Organization was effected as follows: President, James A. Burden; general manager, John L. Arts; secretary, Nicholas J. Gable.

The Ironton Structural Steel Company, Duluth, Minn., which lately made successful experiments in the manufacture of 24-in. I-beams of 59 lbs. per foot, has just completed successful experiments with beams of still lighter section. Beams of perfect construction, 45 lbs. to the foot, have been produced. The result was produced by merely strengthening the mill.

The Birmingham (Ala.) Rolling Mill Company has called a meeting of stockholders for July 22, in Birmingham, to consider a proposition to increase the common capital stock from $500,000 to $600,000. It is said that the company will decide to issue the stock to double the capacity of its steel plant, which will be in operation by that time. The mill, now in the course of construction, is a basic open-hearth furnace of 35 tons capacity and the proposed addition is of another one of the same size.

The Lackawanna Iron and Steel Company's south mill at Scranton, Pa., was shut down June 21st, because of the refusal of a number of the men to accept a reduction in wages. Not being able to operate the departments where the men stopped work, the entire plant had to suspend operations. General Manager Henry Wehrum says the company was keeping the mill open at a loss, that its workmen might be given employment, and that no effort would be made to start it until the men return to work or other competent ones are secured to take their places.

The Oliver & Snyder Steel Company of Pittsburg, Pa., will rebuild their Rosena furnace at New Castle, Pa., which was damaged by an explosion some time ago. Plans for the new furnace have been prepared by George W. McClure & Son, of Pittsburg, Pa. The stack will be 97½ ft. high, and the bosh 20 ft. in diameter. The stack will have a daily capacity of about 400 tons of metal. The iron work for the structure will be furnished by the Enterprise Boiler Company, of Youngstown, O., and the New Castle (Pa.) Engineering Works will do the erecting.

The Jeffrey-Robinson Coal Washing System, which is manufactured by the Jeffrey Manufacturing Company, of Columbus, O, is receiving much attention at this time from the coal operators in general. Its claims for superiority, efficiency and low cost of operation have been thoroughly demonstrated in the many plants now in use. Among some of the recent orders for complete 400-ton washing plants are the following; Kansas & Texas Coal Company, mines at Huntington, Ark.; Muddy Valley Mining and Manufacturing Company, Halliday sboro, Ill.; The Chickamauga Coal and Coke Company, Chickamauga, Ga.; and the Toms Creek Coal and Coke Company, of Pulaski, Va.

The American Steel Casting Company, which owns the six steel plants at Norristown, Thurlow, Sharon and Pittsburg, Pa., Alliance, O., and Syracuse, N. Y., has elected these directors: Daniel Eagan, Philadelphia; N. H. Larzelere, Norristown; William M. Wilson, New York; Charles I. Trevelli, Boston; F. H. Buhl, Sharon; Robert Wetherill, Chester, and A. C. Wall, Orange, N. J. The directors have elected Mr. Eagan president; Mr. Wilson vice-president, and John W. Booth, of Thurlow, secretary and treasurer. A dividend of $1 on each share of preferred stock has been declared, payable June 29th. All the company's plants, except those at Norristown and Syracuse, are in operation.

The Bethlehem (Pa.) Iron Company's annual meeting of stockholders was held in the office at the works on June 22d. The annual report of President R. P. Linderman was received, read and adopted without a dissenting vote. The election of directors resulted in the choice of the old board, namely, R. H. Sayre, Sr., E. P. Wilbur, Jos. Wharton, R. P. Linderman, Beauveau Borie, J. B. Lippincott and G. H. Myers. The directors organized by re-electing R. P. Linderman, president; R. H. Sayre, vice-president; R. W. Davenport, second vice-president; C. O. Brunner, treasurer, and A. S. Schropp, secretary. The appointment of superintendent and other subordinate officers will be made later. There is no probability of any changes in the management of the works so far as the subordinate officers are concerned.

That the merits of Clayton air compressors are known and appreciated everywhere is evident from the following list of companies which have them in use at their mines: Bergen Point zinc mines, Friedensville, Pa.; Copper Queen Mining Company, Bisbee, Ariz.; Hecla Iron and Mining Company, Ironton, O.; Highland Mary gold mine, San Juan County, Cal.; Joliet Steam Granite Company, Joliet, Ill.; Monte Cristo Gold Mining Company, Plumas County, Cal.; Massachusetts & New Mexico Consolidated Mining Company, Hatchita, N. Mex.; Ontario Land and Improvement Company, Ontario, Cal.; Plymouth Coal Company, Plymouth, Pa.; Quicksilver Mining Company, New Almaden, Cal.; Rossie Iron Works, Ogdensburg, N. Y.; Morris Run Coal Mining Company, Morris Run, Pa.; Plymouth Coal Company, Plymouth, Pa; Consolidated Apex Mining Company, Rochford, S. Dak.; Elk Hill Coal and Iron Company, Scranton, Pa.

The Ætna-Standard Iron and Steel Company, of Bridgeport, O., it is announced, has for some time had under consideration the erection of blast furnaces and a Bessemer and open-hearth steel plant. Not long ago the officers of the company entered into negotiations with the Junction Iron and Steel Company, of Mingo Junction, O., for the consolidation of the latter with the former. The negotiations terminated on June 12th in the approval of the plan. The Junction Company will go out of existence and stockholders in it will be paid $700,000 pro rata in Ætna-Standard new stock at 16⅔ premium. The consolidated management will take charge of the Junction plant and operate it in connection with the Bridgeport plant, making it the basis for supplies of pig iron and Bessemer steel. A new open-hearth steel plant will be erected at the Mingo Junction plant to supply the Ætna-Standard finishing mills. The capitalization of the consolidated company will now be $3,000,000 of premium stock, the Ætna-Standard's capitalization having been $2,300,000. The Ætna works at Bridgeport were built in 1873, and the Standard works at the same place were built in 1883. Both works were sheet and bar mills. The Ætna and Standard companies were consolidated a few years ago. The Junction works, at Mingo Junction, were built in 1882, and the Laughlin and Junction works, at the same place, were built in 1886, the first being a cut-nail works and the latter a slab and billet mill. These two Mingo Junction works were consolidated in 1894. The new company will control a Bessemer plant and two blast furnaces at Mingo Junction, a sheet and tin-plate bar mill at the same place, a sheet, bar and structural mill at Bridgeport, and a tin-plate works at Bridgeport.

TRADE CATALOGUES.

The Joseph Dixon Crucible Company, Jersey City, N. J., has published in pamphlet form the paper on "Crucible Making and How They Should be Cared For," read by Mr. John A. Walker, vice-president, treasurer and general manager of the company, at the Detroit, Mich., convention of the American Foundrymen's Association. Coming from so well-known an authority, it is really superfluous to add that the text of the paper is standard on this subject.

The American Blower Company, successors to the Huyett & Smith Manufacturing Company, Detroit, Mich., in general catalogue No. 30 devotes 208 pages to a most thorough explanation of fans, blowers, engines, steam specialties and hot blast apparatus as applied to the heating and ventilating of buildings, and the drying of lumber, brick, etc. The catalogue is of special interest, as it appeals to everyone in its explanations of ventilation, the necessity for which is so much overlooked because of a general indifference that exists in reference to the subject. The perfect heating and ventilation of buildings are of vital importance to all, as all are made to suffer or are benefited by them when improperly or properly done. This company installs systems for both heating and ventilating which give results that are most satisfactory wherever they are being used.

Jenkins Brothers, New York, manufacturers of valves and packing bearing the firm name, have published a new catalogue in which they call attention to the improvements made in their different

steam specialties. The Jenkins Brothers valves, manufactured by them, are their special pattern, contain valuable improvements, and are made of the best steam metal. Their iron body valves have been improved by increasing the thickness of flanges and adding more bolts, making them suitable for either high or low pressure. The Jenkins discs have been greatly improved. They will stand high-pressure steam, and are superior to anything ever placed on sale in this line. The Jenkins standard packing, for its varied uses, has also been improved. Their goods are first-class for steam, gases, water, acids, or oils, are not surpassed by any in the market, and are warranted as represented.

NEW PATENTS.

UNITED STATES.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

WEEK ENDING JUNE 15TH, 1897.

584,327. FUEL-COMPRESSOR. Thomas M. Cochrane, Springfield, Ill. Assignor to Edward B. Cochrane, same place. A segment-block having one end concave and having at its concave end an elongated part in combination with a rotatable roll; and molds adapted to co-operate with the segment-block.

584,339. APPARATUS FOR MANUFACTURING ACETYLENE GAS. John H. Exley, Bradford, England. The combination with a holder, a generator, and a water-passage connecting the two, of a valve removably seated within the passage and having a port or passage of less area than that of the passage formed by the valve-seat, the valve being adapted to be raised from its seat.

584,349. PROCESS OF CARBURETING GAS. Arthur B. Griffen, Verona, N. J. Assignor to the Gilbert & Barker Manufacturing Company, Springfield, Mass. The process consists in charging a part of a carbureter with a volatile hydro-carbon liquid, charging another part of the carbureter with a hydro-carbon liquid substantially non-vaporizable under the ordinary conditions of use, causing the gas to pass first over such volatile liquid, and afterward over the less volatile liquid, and admitting fresh supplies of the volatile liquid to that part of the carbureter charged therewith.

584,368. MINE TRAP-DOOR. Horatio Keyes, Terre Haute, Ind. The combination of a framework supported across the track, a door carried by suitable arms which are pivoted or swung from the framework, the arms carrying the door being attached to the same above its center, and their pivotal or swinging points being below the center of the door.

584,397. MANUFACTURE OF CEMENT. Martin W. L. Nabnsen, Schönebeck on-the-Elbe, Germany. Patented in France November 27th, 1895, No. 252,038; in Belgium December 24th, 1895, No. 119,032, and in England December 28th, 1895, No. 24,898. The method consists in freeing the residues resulting from the manufacture of sulphate of alumina from those components that are soluble in water, and mixing the remainders with lime, without burning the mixture.

584,501. CONCENTRATOR-BELT. George Gates, Jackson, Cal. A concentrator belt having flanges along its sides, the flanges being of substantially the same thickness throughout, and having inner and outer walls, both extending upwardly and outwardly from the body of the belt and joined at their upper limits by short, inclined walls, which form with the inner and outer walls acute angles, whereby the apex formed by each short wall and inner inclined wall is approximately vertically in line with a point on the belt where the base of the outer inclined wall meets the horizontal bottom line of the belt.

584,502. ADJUSTMENT FOR CONCENTRATOR BELTS. George Gates, Jackson, Cal. The combination of an endless traveling belt adapted to pass around end drums, with the upper portion supported upon intermediate parallel rollers, and the lower portion passing essentially slack or loosely over direction drums, one of the drums being mounted to swing and lie obliquely in either direction with the line of travel of the belt.

584,513. APPARATUS FOR PRODUCING GAS. Maurice Lorois, Nantes, France. Patented in France July 30th, 1892, No. 223,360; in India September 9th, 1892, No. 2,579; in England September 13th, 1892, No. 16,413; in Belgium September 26th, 1892, No. 101,511; in Switzerland September 26th, 1892, No. 5,877; in Luxemburg, September 27th, 1892, No. 1,696; in Italy September 27th, 1892, XXVII., 32,757; in Cape Colony, October 11th, 1892, No. 268; in Norway October 11th, 1892, No. 3,055; in Victoria October 21st, 1892, No. 10,073; in New South Wales October 24th, 1892, No. 4,066; in Spain November 24th, 1892, No. 13,850, and in Canada December 19th, 1893, No. 44,918. The combination of a metallic shell and a refractory non-conducting lining, and having air and steam inlets, and a gas outlet, an air-compressor, a pipe leading from the compressor to the air inlet of the producer, means for heating the compressed air before its admission to the chamber of the producer, a steam-generator, a steam pipe leading thence to the producer to introduce steam thereto, and a gas-discharge pipe leading from the gas outlet of the producer, with means for restricting the discharge of gas.

584,568. ROCK-DRILL DRESSING AND SHARPENING MACHINE. William Wanliss, Johannesburg, South African Republic. The combination of stationary and vertically movable dies for shaping the drill, the rocking lever for operating the movable die, the cylinder and piston for operating the lever, the horizontally moving sharpening dies, the rocking lever for moving the same and the cylinder and piston for rocking the second lever.

584,581. WELDING COMPOUND. Henry Eberding, Paterson, N. J. The compound consists of ground steel or iron filings or turnings thereof, borax and ashes, such as wood ashes.

581,627. APPARATUS FOR EXTRACTING GOLD FROM AURIFEROUS MATERIAL. Joel J. Deeble, Bendigo, Victoria. The combination of a vat having vertical ribs arranged at suitable distances apart around its inner periphery, a valve-casing arranged between two of the adjacent ribs and having an aperture in its upper portion, a vertically movable gate arranged in the casing.

581,647. APPARATUS FOR GRADING AND REMOVING DUST FROM PULVERIZED ORE, ETC. Hermann Pape and Wilhelm Henneberg, Hamburg, Germany. The combination with a cylindrical casing having pervious walls and provided at its upper end with a feed hopper and at its lower end with a discharge outlet, of an air-exhaust pipe extending up through the bottom of the casing to the upper portion thereof, a conical deflector arranged above the upper end of the pipe, a cylindrical shell arranged between the lower portion of the air-exhaust pipe and the walls of the casing, the shell having an open upper end and provided at its lower end with a discharge-spout projecting through the bottom of the casing and having pervious side walls, and a conical deflector arranged above the pervious side walls and between the casing and shell.

584,691. APPARATUS FOR CASTING METAL. James B. Laughlin, Pittsburg, Pa. The combination of a molten metal supply spout, a connected series of traveling molds, a mold-coating tank adjacent to the point of discharge of the series of molds.

584,713 and 584,714. APPARATUS FOR MANUFACTURING GAS. John L. Stewart, San Francisco, Cal. The combination of a generating furnace, having a supply-pipe for mingled carbon dust and steam, a device for feeding carbon dust, a device for measuring and feeding steam and mechanism connecting the devices for regulating the feed of both the dust and steam in uniform proportions.

584,730. METHOD OF AND FURNACE FOR MAKING IRON AND STEEL DIRECTLY FROM ORE. Carl J. L. Otto, Dresden, Germany. The process consists in heating a mixture of the ore and coke in a closed vessel under high pressure and constant volume, carrying the carbon oxide produced in the reduction-chambers into the hearth and subsequently melting the spongy iron produced, in a neutral atmosphere, without removal from the furnace.

584,763. MANIFOLD WATER SUPPLY FOR BLAST FURNACE BOSH-PLATES. Henry G. Bauman, Pittsburg, Pa. The combination of a main supply pipe, the manifold connection therewith, annular pipes, and connections from the manifold to the annular pipes, and connections from the annular pipes to the bosh-plates above and below the annular pipes.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING MAY 8TH, 1897.

8,064 of 1896. T. Huntington and F. Heberlein, Pertusola, Italy. Producing oxide of lead from sulphide by mixing with an alkaline earth, heating to dull red heat and forcing air through.

11,833 of 1896. R. A. Hadfield, Sheffield. Method of toughening manganese steel castings.

12,255 of 1896. M. B. Zerener, London. Precipitating gold from cyanide solutions with an amalgam of alkaline metal.

13,371 of 1896. O. Frölich, Berlin, Germany. Extracting gold from sulpide ores with gaseous chlorine without roasting.

WEEK ENDING MAY 15TH, 1897.

12,328 of 1896. J. C. Bull, London. Malleable bronze containing 2 to 5% tin, and made with absolutely pure copper.

21,453 of 1896. H. Banfield, Broken Hill, New South Wales. Form of amalgamating pan.

WEEK ENDING MAY 22D, 1897.

9,524 of 1896. J. A. Bruce-Fraser, London. Extracting gold from ores by placing them in a solution of hydrochloric acid and peroxide of barium, which gives off chlorine.

11,664 of 1896. W. T. Newman, Toronto, Canada. Separating gold from gravels and crushed ores by means of an apparatus similar to a classifier working with an inward current of water.

13,451 of 1896. L. Pszczolka, Gleiwitz, Germany. Refining basic iron by means of a blast of hot compressed air.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the *Engineering and Mining Journal* of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufactures in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the *Engineering and Mining Journal* are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

ALASKA.

ALASKA MEXICAN GOLD MINING COMPANY.—This company reports the clean-up for the month of May as follows: Period since last return, 31 days; bullion shipment, $33,380; ore milled, 14,369 tons; sulphurets treated, 289 tons; of bullion there came from sulphurets, $9,593; working expenses for period, $17,901.

BRITISH COLUMBIA DEVELOPMENT ASSOCIATION.—This association has completed arrangements for constructing 36 miles of railway to Central Alaska, for putting in a big saw mill, and for the establishment of a town site at Skagaway Bay. By this scheme it is proposed to turn all future immigration to the Yukon and the Klondyke gold-fields of Central Alaska from the route through Chilcoot Pass and St. Michael's to that over Skagaway Bay. The pass at the latter point is 2,000 ft. lower than Chilcoot Pass, and is more accessible.

ARIZONA.

COCHISE COUNTY.

CONTENTION MINING COMPANY.—At the mill of this company, at Tombstone, there are many thousand tons of tailings, and George Gribble has secured a lease of the mill and an option on the tailings, which he proposes to work.

GILA COUNTY.

BLACK WARRIOR COPPER COMPANY.—This company is doing an increased amount of work on its claims in Webster Gulch. Five levels are being run in the Black Copper mine, the lowest at a depth of 340 ft., and developments are very encouraging. A new whim is being placed over the Dadeville shaft, which is 100 ft. deep. Also an 18-in. track is being laid on the surface from the Geneva to the Montgomery claims for the transportation of ore from the mine to the end of the wagon road. About 25 men are now employed by the Black Warrior Company and the force is to be further increased. Mr. John Whyte is acting superintendent, and Jas. A. Fleming, president.

YAVAPAI COUNTY.

(From Our Special Correspondent.)

GLADIATOR.—Reports from this mine, near Prescott, are very encouraging, there being much ore in sight. One stope is 116 ft. wide. This is at the face of the tunnel which is about 300 ft. below the surface. The property consists of 14 claims, and it is only a question of time, water and energy to make a great mine of it. During the month of April the average returns were $19.30 per ton, and for May $14.75. This property is being developed by Hon. Byron E. Shear, who was so prominent in the development of the famous Mollie Gibson and other mines at Aspen, Colo.

ARKANSAS.

LAWRENCE COUNTY.

BLACK ROCK MINING COMPANY.—This company has organized with R. McCreery, President; J. W. Coffman, vice-president, and J. W. Orr, secretary and general manager, for the purpose of developing mines. The capital stock is $25,000.

CALIFORNIA.

BUTTE COUNTY.

(From Our Special Correspondent.)

GOLD BANK.—At this mine, just northeast of Forbestown, ore has been struck in the long tunnel which has been driven below the old workings. Over 100 men are employed. Power is obtained to work the drills and the 40-stamp mill from the Forbestown Ditch.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

EL ENCINO.—At this mine in Chile Gulch, four miles south of Mokelume Hill, the tunnel has reached the old workings, and a large body of water has been drained off. These old works are badly caved. As soon as the water has been taken out to the tunnel level a pump will be put in to drain the lower level. The superintendent, James Regan, is confident he can put the mine on a paying basis very soon.

JUDA.—This mine, three miles north of San Andreas, at Spring Gulch, formerly known as the Edna Mine, is now well equipped with machinery. The 4-stamp mill has been completed, and the power plant will enable them to sink 1,000 ft.

KERN COUNTY.

(From Our Special Correspondent.)

RANDSBURG DISTRICT.—A great deal of prospecting is still being done not only around Randsburg but in every district in and around the desert. No excitement, but cool and level-headed prospecting.

The Wedge is down 315 ft. in rich quartz. This is the deepest working in the district. A drift will now be started in order to save the miners a long climb when a shot is fired.

The Kenyon is still holding the record for the richest quartz. The Butte Company, owned by Montana men, has a shaft down 225 ft., and is running a drift on that level.

The J. I. C., owned by Jim Brown, of Leadville, Colo., is down about 200 ft. and a drift has been started.

The Rand Company is taking out some very good ore. This mine is again in litigation.

The King Solomon is down 200 ft. and sinking will continue down to the 600-ft. level.

The Val Verde and the Merced are shipping ore. The Petaluma, 5 miles west of Randsburg, is taking out rich ore, and has caused a great deal of prospecting in that neighborhood.

The Little Butte and the Gray Eagle are also doing development work.

LOS ANGELES COUNTY.

(From Our Special Correspondent.)

The town of Acton is becoming quite a mining center. At the Gold Note Superintendent Pearson is erecting a roasting furnace of original design, which, when completed, will enable him to handle the most rebellious of ores. A large force of men will be employed at the Mt. Gleason mine.

The Red Rover mine will soon be among the paying mines of the county. The mill is being thoroughly remodeled and equipped under the direction of W. R. Shilling.

The Los Angeles mine has lately been purchased by Los Angeles parties, who intend to equip and start up the enterprise on a large scale.

Several prospectors report encouraging finds in the neighborhood.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—In the Standard Consolidated mine at Bodie for the week ending June 12th the ore in the north drift from raise 3 in the Bullion vein, 114 level, was split and poor. The south drift on faulted portion, same vein, 172 level, shows 10-in. fair-grade ore. The north drift in the Black vein, 265 level, has run into soft ground and is stopped. In the north drift, same vein, on the 380 level, they expect to enter new ground soon. In the north drift and raise No. 1, Fortuna vein, 600 level, they are breaking down ore of good grade. The ore in the stopes on the 336 level is variable in grade, but on the whole fair. In the 380 level stope the ore is of quite fair grade. The electric hoist has been completely established in the new shaft-house and is in operation. Will commence repaing the shaft June 13th. At cyanide plant No. 1, 458 tons of tailings were treated for the week. At plant No. 2, 446 tons were treated.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

ESCONDIDO.—These mines, two miles south of Esconidido, which have been idle for some time, have been bought by Eastern men. Fifty men will be put at work and a large mill erected.

MESQUITE MINING DISTRICT.—In this district, about 50 miles north of Yuma and seven miles from Glamis Station on the Southern Pacific Railroad, two claims, the Irma and Bay Horse, are putting out large quantities of ore that mills $800 per ton, and other mines are said to be even richer. Water is very scarce in this section, most of the drinking water used by the miners coming from the locomotive tanks at Glamis.

SENATOR.—At this mine, 14 miles from Yuma, a 20-stamp mill is to be erected. The vein on this property is from 12 to 40 ft. in width, the pay streak averaging about 4 ft. in width.

SHASTA COUNTY.

(From Our Special Correspondent.)

TEXAS CONSOLIDATED.—This mine, at Dry Diggings, 4 miles from Redding, has been shut down owing to want of water-power to run the mill. This power has been supplied by the Garlick Electrical Company, which has a plant on the Sacramento River, at the mouth of Spring Creek, but owing to a dispute with the Mountain Copper Company, of Keswick, in regard to the lease of the ditch, the latter company has cut the ditch, which caused all operations at the Texas mine to cease. There will probably be complicated litigation, and in the meantime the Texas, one of the largest producers in the county, will remain idle.

SIERRA COUNTY,

(From Our Special Correspondent.)

NORTH FORK MINING COMPANY.—This company is running three gangways in the gravel at the South Fork, the North Fork and the Lucky Dog claims, near Forest City, and will soon be ready to breast out good pay gravel. J. O. Jones, the superintendent, is developing the property in a very systematic manner. This company also owns the Hope mine, an extension of the Plumbago mine, on the Minnesota side of the ridge. 2½ miles south of Alleghany. The vein is 20 ft. in width.

TRINITY COUNTY.

(From Our Special Correspondent.)

LA GRANGE MINING COMPANY.—This hydraulic mining company, which has been working 400 acres on Oregon Gulch, 4 miles west of Weaverville, has purchased the Johnson Farm Gravel Mine below Douglass City, for $25,000.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

MILLER & HOLMES.—This mine is located on Quartz Mountain, about two miles southeast of Jamestown. Work on shaft No. 2 was suspended to allow the men to put in a cage. This shaft has been sunk to a depth of 275 ft., and drifting from the lower level is being pushed rapidly. The new mill has commenced to crush ore.

MOUNT JEFFERSON.—This mine, at Groveland, is owned by Boston parties, who have been doing some development work during the course of which a strike has been made showing a rich vein just west of the old one. This mine was a great producer up to 1880. The superintendent, J. S. Meighan, is making arrangements to sink a deep shaft.

PATTERSON.—This mine, just west of Tuttletown, was first opened in 1856 and has been worked to a depth of 700 ft. The pay streak is very wide and can be mined and milled at a small expense. A large milling plant is to be put in very soon.

PHILADELPHIA & RHODE ISLAND.— These mines, two miles south of Carter, on the east side of the North Fork of the Tuolumne River, are to be actively worked. The main working drift is now in over 300 ft. The present face has a depth of backs of 250 ft., with a well-defined vein at this point 6 ft. in width. There is, in the aggregate, 700 ft. of tunnels in the veins. W. H. McClintock is superintendent.

SANTA YSABEL.—At this mine, on the south end of Quartz Mountain, development work still goes on. There are three ledges on the property, from which a large amount of high-grade ore has been taken out and stored awaiting the completion of the new mill, now in course of erection. Seventy men are employed.

SOULSBY.—This mine, at Soulsbyville, is being thoroughly overhauled in the old works and new ones opened up. New machinery has been added and a force of miners and workmen are kept busy. One shaft is down 1,000 ft. Wm. Sharwood is superintendent.

STAR.—At this mine, 18 miles northeast of Sonora, near Rose Creek, 25 men are at work, sinking, crosscutting and drifting. There is a 10 stamp mill, both water and steam power, a complete chlorination plant, etc., on the property. The ore averages well. F. W. Williams is the superintendent.

COLORADO.

BOULDER COUNTY.

GORHAM.—Giles E. Taintor, of New York, and George S. Ramsey, mining engineer of Pittsburg, are in Colorado for the purpose of taking possession of these coal mines, which Mr. Taintor has just purchased for $200,000. The veins in these mines are 10½ ft. thick and are of excellent hard coal. Fifty thousand dollars will be spent in betterments.

WHEELMAN'S MINING AND MILLING COMPANY.—Work on this company's tunnel continues night and day. The property is on the north side of Boulder Creek, and will pass under the mines of Sugar Loaf District, tapping the Livingston, Amalgam Thief, Smoky Hill, Potter, Little Corporal and others 1,000 ft. below the surface. Many other mines that are less known to the mining public because of the small amount of development will be tested at great depth, as the tunnel will also pass through them.

CLEAR CREEK COUNTY.

BELLVIEW-HUDSON.—This mine is in good ore and has 4 ft. of mineral, which runs 30% lead and $25 in gold and silver per ton. A carload of it has just been handled at Idaho Springs. The owners are beginning a crosscut tunnel to reach the lode. It must be driven for 750 ft. and will gain as many feet in depth. Crosscutting is also going on from the bottom of the shaft at 500 ft. for the purpose of opening one of the other lodes of the group at greater depth.

MILLINGTON.—For the past two years, A. J. August, of Lawson, and D. D. Dewey, of Idaho Springs, have been driving an adit level on the Millington lode to reach an ore chute pitching from above and have finally found it. The streak is 12 in. wide and the first test when encountered and while scattering ran $200 per ton.

(From Our Special Correspondent.)

BOSTON MINING COMPANY.—The Gold Medal property, owned by this company, at Idaho Springs, has received a new hoisting plant, and arrangements are completed for sinking the shaft to a much greater depth. The streak as showing carries about 4 ft. of pay ore. Most of it is milling and treated by amalgamation. Clean-ups from that taken out in the development are averaging 68 oz. of gold per week.

KAVERN.—This mine, at Dumont, which has lain idle for a number of years because of its low-grade mineral, is being started up by Eastern people. The streak is large and under the more modern treatment by concentration it can doubtless be made to pay.

LAMARTINE.—About one year ago Himrod & Hudson, of New York, the owners of this big mine, decided upon trying the leasing system in the workings which were supposed to be about exhausted of mineral. At the same time they continued work in the levels below 700 ft. and also drifted into new ground. The leasers were at work but a short time when some big bodies of ore were found and the clean-ups were surprisingly large. This left the owners holding the sack. They have commenced the discontinuance of the leasing system and are arranging to do the work on their own accord. As an instance, one of the leasers has just shipped ore the first class of which ran 14·50 oz. gold and 180 oz. silver per ton, and on the second-class mineral finds 3·60 oz. gold and 60 oz. silver.

MENDOTA.—The output of high-grade ore from this mine in June was 180 tons. It is the intention to sink the winze and also resume the sinking of the main shaft. This is one of the high-grade silver producers at Silver Plume.

NEW DUNDERBERG MINING COMPANY.—Since the settlement of the difficulties over the ownership of the Frostburg lode at Silver Plume this company has resumed the working of the lode and intends putting in a hoisting engine to be driven by air from the compressor at the tunnel.

NEWHOUSE TUNNEL.—This big mining undertaking, at Idaho Springs, has been driven toward the mines of Seaton Mountain and those of Gilpin County for about 1½ miles. In that distance it has cut some 50 leads, many of them blind. The greatest depth so far gained is 1,800 ft. No air connection has been made, but owners of some of the lodes of Seaton Mountain are figuring on the connection. When that is made it is more than likely that the mines will begin the movement of ores through that bore, although Mr. Newhouse has long been quoted as saying that no mining would be commenced until the tunnel had been driven the full 4½ miles to the Central City end. The first air connection is to be made with either the Silver Queen mine or the Gem. Two air compressors and a Hyatt exhauster keep the tunnel clear of foul air. A powerful air compressor is in course of construction by George Leyner, of Denver, who is introducing some new features which are claimed to be a marked improvement over the ones now working. In the line of the tunnel there are 1,100 known lodes and of these 200 are producing mines, so one can partly realize the magnitude of the undertaking.

STANLEY MINING COMPANY.—This property, at Idaho Springs, is under heavy development and deals have been reported several times, it being claimed that the Rothschild people, who bought the Tom Boy mine, were figuring on it. If this is so their offer was not accepted, although it exceeded that made to the Tom Boy owners and which was accepted. The mine has a big ore reserve and is putting out a good tonnage exclusively from the development work. The capacity of the mill is being trebled.

SUN & MOON MINING AND MILLING COMPANY.—The Cleveland owners of this property, at Idaho Springs, have completed plans for the more extensive working of this group of lodes. The two hoisting plants are to be removed, and the Minott shaft is to be sunk for about 2,000 ft. to connect with the Newhouse tunnel. This will carry the shaft nearer the junction with various lodes and continue to open out the mineral bodies which are now showing. A good tonnage of ore is being moved. The old plant of machinery is not heavy enough for doing the work of the company as they would like.

CUSTER COUNTY.

BASSICK.—Judge Allen has decided to appoint a receiver for this mine. The present action was brought by minority stockholders asking that the Court determine the rights of the company. The value of the mine is stated in the complaints filed in this case to be $2,000,000, but well-informed mining men place the value at $5,000,000. It has paid hundreds of thousands of dollars in dividends.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

ANACONDA GOLD MINING COMPANY.—The Layhew lease on the Great View, on Gold Hill, one of the properties of this company, now has four shafts working, all of which are in ore that runs all the way from mill dirt to better than $1,000 a ton.

BANKERS GOLD MINING AND MILLING COMPANY.—The Grouse, on Bull Hill, one of the properties of this company that has been closed down for some weeks on account of litigation, is to be started up again within a few days.

CRIPPLE CREEK CONSOLIDATED MINING COMPANY.—Fifty tons of ore was sent out from the Geneva, on Gold Hill, recently. Of this amount, 40 tons had an average value of $44 a ton and the remainder returned a value of an ounce.

ELKTON CONSOLIDATED MINING AND MILLING COMPANY.—At the annual meeting of the stockholders at Colorado Springs the following new board was elected: George Bernard, W. S. Jackson, Samuel L. Bernard, Wm. Sidemwell, Louis R. Ehrich, W. H. Hoagland and J. W. Graham. The officers were authorized to purchase $100,000 worth of government bonds. The annual expenditure for improvements was $12,000; receipts were $533,591, and expenses, $172,214. Smelting ore shipped, 3,418,849 tons, returning $434.440; shipment of mill ore, 3,847,473 tons, valued at $81,105.

MIAMI F.—This tunnel, on the west slope of Squaw Mountain, shipped 13 tons of ore during the week ending June 19th, one ton of which was high grade. The balance of the ore is expected to run from 3 to 5 oz. in gold. A new steam plant on the property is in operation.

MOON-ANCHOR GOLD MINING COMPANY.—During the week ending June 12th this company shipped a total of 210 tons of ore. Of this amount 103 tons has returned $54.40 per ton; 30 tons, $130 per ton; and the remainder, 70 tons, is expected to return high-grade mill values. The following week the company shipped 230 tons, which will run from $35 to $160 per ton. There is not over $12,000 worth of ore either in transit or at the various mills and smelters. The main shaft has been cleared of water and the work of driving the 5th level for the ore chute will be continued immediately.

LAKE COUNTY.

EXISTING CONDITIONS.—It was just a year ago this week that the great labor struggle was begun in this camp which gave such a setback to the mining industry at a time when Leadville was forging to the front. As will be remembered, this strike lasted ten months and the camp is now but slowly recovering from its effects. The outlook, however, is very promising. Much new work is being carried on and there is more to be put under way. The next important step will be the drainage of the downtown area and from what can be learned the machinery, if satisfactorily built, should arrive here early next week. An increased tonnage can be looked for from this time on and with the downtown properties again on the shipping list, which should be within 60 days after the pumps are started, the output of the camp will be the heaviest in years.

LEASING SYSTEM.—Never in the history of the Leadville camp has there been more leasing going on than at the present time. All over the camp the hills are dotted with these workers, many of whom, although not shipping any rich ore, are doing well enough to pay them for their trouble. The leasing system is undoubtedly a great boon to the camp, as, while giving employment to men who would otherwise be idle at this time, it also assists in developing properties that otherwise would not be developed just now.

MANGANESE OUTPUT.—Geo. W. Cook, the Western representative of the Illinois Steel Works, was in Leadville during the week and visited the Catalpa-Crescent, which is at present shipping over 100 tons of manganiferous iron ore to the works in Illinois. Mr. Cook increased the order to 150 tons daily and as soon as the Sixth street property resumes work another increase from the camp will be made. It is the intention that during 1897 shipments of 40,000 tons of this ore will be made to the Illinois Steel Works.

BIMETALLIC SMELTER.—Workmen are on the ground repairing the furnaces and making all arrangements to blow in at this plant. It now seems likely that the smelter will blow in on July 1st. Manager Ballou announced this week that he was in the market for ores, and, although only one furnace will be started up next week, it will not be long, it is thought, before the Bimetallic is again running full blast.

LA PLATA.—This property is under lease and the lessees are shipping steadily from a good body of iron and lead ore. This property is almost a steady producer and all of the lessees who have operated there have been successful.

LIME LEASE.—The lessees are now doing very nicely with this property, located on Iron Hill, and are shipping about 200 tons of gold ore per month, which gives them profitable returns.

PRINTER GIRL.—The lessees have their shaft down over 200 ft. and are in porphyry. In running a drift a streak of ore was opened up that assays over 2 oz. gold and 21 oz. silver per ton. Some important development work is to be pushed ahead.

RUBY & CINCINNATI.—These properties, located in the Western Pass section, are being operated by Leadville people, and are exciting general attention just now, due to the fact that some fine ore has been opened up to such an extent as to prove that a big strike has been made. A tunnel has been run in over 350 ft., and a fine body of lead ore opened up. This stuff gives returns of from $12 to $15 per ton after paying all hauling and smelter charges, the former, of course, being very heavy. The ore body is from 3 to 14 ft. high with no sides, and the strike is considered the largest ever made in that section.

TRIUMPH.—A new leasing company, composed of leading mining men of Leadville and Denver, has been formed to operate this property. It is well located, and it is thought that by sinking the shaft deeper and then prosecuting development work the Triumph will become a big property.

WINAN TUNNEL.—This is one of the most important enterprises being carried on in the vicinity of the Oro District. The tunnel starts in from California Gulch, running about southeast a short distance above Oro. The Winan is well located between the Ibex and the Lillian, and the owners figure to catch the rich ore body proving to be the rich Breece Hill ore chutes. About 325 ft. from the mouth of the tunnel a 140-ft. shaft connects with the surface. The shaft also extends 90 ft. below the level of the tunnel, and will be sunk deeper just as soon as the new machinery is in place.

YAK MINING AND TUNNEL COMPANY.—These people are making good headway on their big proposition and are pushing in the tunnel at the rate of 6 to 10 ft. every 24 hours. The tunnel is running in the direction of the Ibex properties. The new ore chute recently opened in one of the drifts is said to be showing up well. Shipments are regular and the extensive developments already described in these columns mean much for that section of the camp, and all of Leadville in fact.

SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

BULLION MINING AND MILLING COMPANY.—This company recently completed a Tremaine stamp mill, having a capacity of 35 tons of ore per day, a short distance from the town of Ophir. It was put in operation a few days ago, treating mineral from the Attica mine, which is under lease and bond to the above company. The ore is concentrating mineral carrying gold, silver, lead and iron sulphides, and if satisfactory results are obtained, it is the intention of the company to purchase the property. The pay streak is from 12 to 24 in. in width and averages $75 per ton in the three metals. Men are now engaged in development work and in taking out ore.

BUTLER.—This property, located at Ophir Loop, is owned by F. P. Mogensen, whose post-office address is Ames. Development work that has been in progress for sometime is nearing completion, and several carloads will be produced per week, two having been sent out last week which returned good values in silver and lead and some gold.

CONTENTION GROUP.—This group, located in Bear Creek, near Telluride, and owned by E. A Hockley & Company, of Telluride, is now, as it has been for years past, undergoing systematic development. The main tunnel level, driven on the lead at a depth of 1,000 ft., is in a distance of 1,200 ft. and going ahead several feet a day, opening up from 3 to 6 ft. of quartz that averages from $25 to $35 in gold per ton on plates by amalgamation. A sale of the property to Eastern capitalists is pending. It is said the purchasers will equip the property with a mill and tramway, and operate it on an extensive scale.

GOLD KING CONSOLIDATED MINING AND MILLING COMPANY.—Part of the complement of this company's 40-stamp mill is dropping on ore, belonging to Fred and Charley Beck, who are leasing in the upper workings of the Gold King mine. In the course of the next week or two the entire capacity of the mill will be running. The lessees' ore is running about $40 per ton. After this lot of mineral has been treated, ore belonging to J. K. McCoy, leasing in the lower workings of the Gold King will commence to be put through. In addition to the large quantity of ore he has stacked up at the mine, there are large areas blocked out in the levels that have been driven both ways on the vein from the bottom of a shaft sunk from the seventh level.

JAPAN MINES COMPANY.—The Japan mine and concentrating plant are operating full capacity and employing from 70 to 80 men. The mill is turning out concentrates worth $100 per ton in gold, silver and lead, at the rate of 45 cars per month. Several carloads of high-grade mineral is shipped in its crude state per week, netting the company from $750 to $1,000 per car, which, together with the concentrate values, enable the company to realize a net profit of $30,000 per month from the operation of the mine. Walter Beam, manager of the company, will soon inaugurate some heavy development work by sinking the 100-ft. shaft from the main level several hundred feet deeper and drifting on the lead both ways from it at intervals of 100 ft., and driving the Mikado crosscut tunnel, now in a distance of about 1,400 ft., ahead to intersect a western extension of the Tom Boy lead. It is estimated that it will be necessary to drive only 250 to 300 ft. farther to reach the objective point.

NORTH AMERICAN EXPLORATION COMPANY.—This company for a month past has been supplying 10 stamps of the Telluride Power Transmission Company's 120-stamp mill in Bear Creek, with mineral from the Nellie mine, which it is operating under lease and bond. By July 1st a Huson tramway, over a mile in length, will have been completed between the mine and the mill, when 30 stamps will be regularly supplied. Heavy development is being vigorously prosecuted, the different levels opening up from 4 to 6 ft. of quartz that carries from one to several ounces gold per ton. The lower level is in the mountain a distance of about 1,600 ft. and is expected to cut the lead of the Star Gazer, crossing the Nellie at right angles, any day. This property is also bonded to the North American Exploration Company, and if it shows up as well at the depth it will be intersected, 1,000 ft., as near the surface it will be bought and worked in connection with the Nellie. The lead carries 4 ft. of ore, free milling to a large degree, which averages $20 per ton on plates by amalgamation, as has been shown by a large mill run.

OCCIDENTAL.—This property, running parallel to and about 250 ft. distant from the Tom Boy lead, in Savage basin, is being worked under lease and bond by Jesse W. Farwell, of Detroit, Mich., and ore worth from $25 to $45 in gold per ton is exposed in three different places. Operations for some time past have been confined to exploring the vein and wherever exposed it shows 3 to 5 ft. of ore. It is the intention to take out a large mill run for treatment and if it yields expected results steps will then be taken to work the property on an extensive scale and equip it with a mill and tramway.

PRIDE OF THE WEST.—This property is located in Bridal Veil basin, and owned by O'Donnel & Jackson, who recently erected a 5-stamp mill in close proximity to the claim for the treatment of the ore. The mineral put through so far ran $60 per ton, causing the institution of important development work, which, when completed, will render large areas of stoping ground available.

SMUGGLER-UNION MINING COMPANY.—N. T. Mansfield, general superintendent of this company, will soon commence the erection of an addition to the 50-stamp mill building at Pandora, in which will be installed Huntington mills, vanners and concentrators for the purpose of regrinding and running the tailings over a second set of vanners after they leave the large vanner room on the main floor of the building. In this way a much closer saving of values is expected to be accomplished than heretofore. The mill is treating 180 tons of ore daily, which yield 30 tons of high-grade gold, silver and lead concentrates on an average. The concentrate and high-grade mineral shipments of this company from Telluride amount to about 140 carloads per month. A. G. Kirby, who recently secured a lease on the tailings from the mill, has just completed a large building below the mill and in it has put concentrators, vanners and other contrivances for saving the values carried by them, and the plant is now about ready for operation. It is said that the mill saves only from 50 to 60% of the values in the ore. There are 300 men on the pay-roll of the Smuggler-Union Company, a considerable number of whom are employed on heavy development in the lowest workings of the properties.

TOM BOY GOLD MINES COMPANY.—The mill tunnel crosscut which has been in course of driving for two years past was completed last week, it having intersected the Tom Boy vein at a distance of 2,010 ft. in the mountain, at a depth of 450 ft. below the lowest of the upper workings. At the intersection the lead carries 12 ft. of ore identical to that in the upper workings and fully as valuable, which means that taking the entire matter between walls it runs $20 per ton. The vein will be extensively explored from the intersection by east and west drifts and the ground opened up between the tunnel and the lowest of the upper workings as rapidly as possible, and for this work a large air compressor, having a capacity of driving nine machine drills at the elevation at which the mine is located, 12,000 ft., will soon be installed at the mill. After the east drift has been driven 600 ft. an upraise will be made from it to connect with the bottom of a shaft sunk from the lower level of the upper workings, which will provide good ventilation and drainage for the properties.

VALLEY VIEW GOLD MINING COMPANY.—This company's bucket tramway, 2,000 ft. in length, connecting the Valley View and Chippie group of mines and the Valley View 10-stamp mill on Marshall Creek, was put in operation a few days ago. It has a capacity of 60 tons of ore in 10 hours, and is so automatic in its operation that it requires the attendance of but one man. The mill is turning out retorts at regular intervals, while the concentrates also yield high gold values. A shaft is being sunk from the fourth level and as depth is attained the general average is $45 per ton. The lead is opened up in six different places and shows from 2 to 5 ft. of quartz in every place.

CONNECTICUT.

MIDDLESEX COUNTY.

BRAINERD, SHALER & HALL QUARRY COMPANY.—Formal notice of acceptance of the charter of this company has recently been filed. It succeeds the firm of the same name which has operated large brownstone quarries near Portland. The capital stock paid in is $660,000.

FLORIDA.

DE SOTO COUNTY.

CONSOLIDATED PHOSPHATE COMPANY.—This company, of Fort Ogden, is preparing to make extensive improvements at its plant, and is also erecting a large dry-bin.

IDAHO.

Governor Steunenberg has named the following as delegates to the International Gold Mining Convention, to be held in Denver July 7th, 8th and 9th: Hon. J. H. Hawley, Boise; James Hutchinson, Silver City; Frederick Irwin, Silver City; Judge J. H. Richards, Boise; Frank D. Howe, Neal; F. B. Bonnell, Flint; Hon. J. J. Storey, Albion; K. P. Plowman, Idaho City; Hon. A. B. Moss, Payette; Hon. A. J. Macomb, Salmon City; William Allen, Sr., Gibbonsville; W. F. Somercamp, Weiser; ex-Congressman Willis Sweet, Moscow; S. D. Glidden, Pierce City; Charles Sweeney, Wardner; Hon. W. B. Hepburn, Osborn; William Balderston, Boise; John Lamb, De Lamar; Hon. E. H. Dewey, Dewey; Hon. W. A. Coughanour, Payette; W. G. Shedd, Idaho City; Hon. Aaron F. Parker, Grangeville; ex-Governor W. J. McConnell, Moscow; George A. Williams, Hailey; David Horan, Boise; Hon. S. P. Donnelly, Lake View; Hon. J. J. McCarthy, Boise; Hon. Lyttleton Price, Hailey.

OWYHEE COUNTY.

DE LAMAR MINING COMPANY, LIMITED.—The following is the return for the month of May: Crushed during the month, 4,660 tons; bullion produced in the mill, $44,680; estimated value of ore shipped to smelters, $400; miscellaneous revenue, $155; total produce, $45,235; total expenses, $34,430; profit for the month of May, $10,805.

ILLINOIS.

WARREN COUNTY.

MORRIS QUARRY.—A lease of this quarry, 2 miles from Berwick, has been taken by Ingram & Eaton. There is a large bed of brownstone, which has been worked at intervals for 30 years.

KENTUCKY.

MARTIN COUNTY.

TUG RIVER COAL AND SALT COMPANY.—Leo Brigle, of Cincinnati, O., has, it is reported, purchased 20,000 acres of coal and gas lands for $68,000 from the above company. If the sale is confirmed, the purchaser will develop same.

MARYLAND.

H. LANGE & SON COAL COMPANY.—This company, of Baltimore, has been incorporated by August H. Lange, George W. Bahlke and others, with a capital stock of $10,000.

MINNESOTA.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ARCTURUS IRON COMPANY.—This property, at the west end of the range, has been reopened for explorations and some 40 men are at work.

BIWABIK BESSEMER COMPANY.—This company has made sales of 500,000 tons of ore for this season's delivery, at about $2.25 a ton, and is actively engaged in work. It will keep two shovels in ore mining night and day for the rest of the season, and will have two others, under the contract of the Drake Stratton Company, in the stripping. In all about 400 men will be employed all season, and probably a very considerable amount of work will be done during the succeeding winter.

CLOQUET IRON COMPANY.—This mine, at Eveleth, formerly known as the Vega, and owned by Capt. Jos. Sellwood, of Duluth, and others, has been closed and the pumps removed.

MOUNTAIN IRON COMPANY.—This company's mine loaded on night shift recently 174 cars of 26 tons each direct from the ore body and on one day shift 210 cars. It is averaging about 250 cars a day. This record was made with the new 90-ton Vulcan shovel that was recently installed at the mine.

NORMAN IRON COMPANY.—The stockpile here, containing some 18,000 tons, has been cleaned up and shipped, and operations are not active at present.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The shipment was not as large as the preceding week, being 12 carloads of zinc ore and 3 carloads of lead ore less. Compared with the corresponding period of last year the past year's shipment was an increase of 3 carloads of zinc ore and decrease of 5 carloads lead ore. The top price paid during the week was $21 per ton with an average of $20 per ton. The Picher Lead Company reports paying $21.50 per thousand pounds for lead ore the first of the week, dropping to $20 on the 15th. The corresponding week of last year zinc ore sold at $20.50 per ton and lead ore began the week at $16.50 per thousand pounds and closed at $16.

There is a small surplus of lead ore in the district and this week will clean up nearly every ton of surplus zinc ore in the district, as it was bought last week and will be shipped to Swansea, Wales, via Galveston, Tex.

Following are the sales of zinc and lead ores for the week ending June 19th: Joplin zinc, 1,458,940 lbs.; lead, 128,890 lbs.; value, $18,024. Carterville zinc, 899,020 lbs.; lead, 172,810 lbs.; value, $12,305. Webb City zinc, 460,210 lbs.; lead, 57,960 lbs.; value, $5,901. Galena zinc, 2,390,000 lbs.; lead, 463,070 lbs.; value, $32,430. Aurora zinc, 350,000 lbs.; lead, 15,000 lbs.; value, $3,405. Oronogo zinc, 108,660 lbs.; lead, 6,040 lbs.; value, $1,204. Springfield zinc, 88,000 lbs.; value, $924. Carthage zinc, 64,440 lbs.; value, $677. Alba zinc, 62,000 lbs.; value, $651. Belleville zinc, 40,650 lbs.; value, $407. Stotts City zinc, 32,200 lbs.; value, $338. District total for last week: Zinc, 5,954,120 lbs.; lead, 843,770 lbs.; value, $76,268. District totals for 24 weeks: Zinc, 154,838,720 lbs.; lead, 27,806,240 lbs.; value, $1,958,990.

BUNCO MINING COMPANY.—They have leased 27 acres of the Brinkerhoff land near Cave Springs. There are about 10 producing shafts on the property, the deepest being 80 ft. They make 60 tons of zinc ore and 50,000 lbs. of lead ore weekly.

CENTER VALLEY COMPANY.—This company has leased 200 acres of land in the Center Creek bottoms, between Webb City and Oronogo. They have seven large pumps running steadily, and will commence to work the upper levels for lead ore. Munson Smith & Company are working their lot at 45 ft., and are taking out rich lead dirt. Before they were stopped by the water they were producing over 50,000 lbs. of lead ore weekly.

COYNE & COMPANY.—On the Chatham lease, at Carterville, this company recently began to run an old shaft 120 ft. deep, and after going 20 ft. deeper penetrated 20 ft. run of rich, zinc ore. They have leased two lots adjoining and will sink a shaft down to the ore.

GASTON HARE & COMPANY.—This company has completed its steam concentrating plant and will start it at once. It is situated on the Wilkes land, about a mile south of Joplin. They are drifting at 120 ft. on a 40-ft. face of disseminated zinc ore with enough water to run the plant.

HELYON ZINC COMPANY.—This company has a fine, large concentrating plant on the Mohaska land, which they started up last week and made their first turn-in of 16 tons of zinc ore. They have opened up a large face of zinc ore.

INTER-URBAN COMPANY.—They have leased 40 acres of the Richards land, 4 miles west of Joplin. In one shaft they struck lead and zinc ore at 51 ft. and went through 15 ft. Bodine & Company, at 62 ft., opened up a large face of zinc ore. Bridgets & Company, at 35 ft., had a run of lead, and at 55 ft. struck a run of zinc ore.

REED MINING COMPANY.—This company, capital $2,400, has been organized with G. A. Noel, president; Villa Noel, vice-president, and G. F. C. Carl, secretary and treasurer, for the purpose of developing mines in Joplin. Officers of company are all of Webb City.

SADTLER MINING COMPANY.—Six new shafts are being sunk on this company's land, and the old mines are making good outputs of both lead and high-priced zinc ore.

WEST JOPLIN LEAD AND ZINC COMPANY.—The old Sherwood mines, which is the name of a 40-acre tract of land 5 miles northwest of Joplin, was sold June 18th by this company, the selling price being $25,000. The purchasers were C H. Hall, of Ishpeming, Mich., and W. D. Rees, of Cleveland, O. The sale includes the land, developed mines, machinery, etc. The property has been a good producer and will be paying dividends.

MONTANA.

MADISON COUNTY.

(From Our Special Correspondent.)

CLIPPER GROUP.—This group of claims, located about three miles from the railroad at Pony, is producing large quantities of high-grade smelting gold ore, which is treated at Butte, Helena and other places. Most of the base ore comes from a tunnel over 1,400 ft. long, which has over 1,000 ft. of ground above it at the breast. Sufficient milling ore is also produced to keep the company's 20-stamp mill running continuously. A cyanide plant is being installed to treat the tailings after they leave the vanners.

EASTON.—This mine, located about five miles from Virginia City, has started up again with about 30 men after its regular winter shut-down. The concentrator, located at the mine to treat the lower-grade ores, is working very satisfactorily, but has to suspend operations in cold weather on account of the water freezing. The medium-grade ores are treated at the company's mill, located below Virginia City, while the high-grade ore is shipped to the smelters. Some of the high-grade ores run 300 oz. in silver and $60 to $70 in gold.

GARNET GOLD MINING COMPANY.—This company, owning and operating the Galena mine, located about three miles from Pony, after experimenting many months with a new pulverizing machine, has concluded to put in the old reliable stamp mill. Orders have accordingly been given for 20 stamps. The mine consists of a large vein of low-grade gold ore, which is easily mined, and with a good mill located close to the mine, it looks like a paying concern.

GOLD HILL.—This mine, located about one mile from Gaylord, operated under lease and bond by J. K. Clark and others, of Butte, employs seven men developing the property. Some $100 gold ore is produced, with good indications of becoming a steady producer.

LITTLE KID.—This gold mine, located at Bald Mountain about 18 miles from Norris, has started up again after a month's enforced shut-down, owing to bad roads, under the superintendency of F. L. Neurenberg and foremanship of Charles Stewart. The company operates a 20-ton Bryan mill, with Johnson concentrators. All ores under $40 per ton are milled, while ores of higher grade are sold to smelters, some of which return over $100 per ton. About 20 men are employed.

MAYFLOWER.—This mine, located about 6 miles from Gaylord, attracted a good deal of attention last year, by reason of an unexpected production of rich, peculiar-looking telluride ore out of a chute of ore which, although it is not very long, still keeps going down, carrying ore of a much lower grade. All the miners, with the exception of a sinking crew, have been laid off. The mine is down about 150 ft., and produced, it is stated, about $300,000 in nine months, with about 20 men employed.

MOHEGAN.—This gold mine, located at Red Bluff, keeps its 10-stamp mill steadily running on a fair-grade gold ore. The shaft is down about 200 ft. and there is considerable water to pump. About 20 men are employed in and around the mine and mill.

REVENUE GOLD MINING COMPANY.—This company is a success, fully operating a cyanide plant located about 6 miles from Norris, which has been running steadily for years, and is, I believe, the first successfully operated cyanide plant in Montana. The mine is located about a mile from the mill and furnishes employment for 25 miners. Test runs are made of ores from surrounding mines.

ROUGH & READY GOLD MINING COMPANY.—This company is putting up a 5-stamp mill about 10 miles from Norris, which will soon be completed. The company owns some claims which are considered very promising.

SILVER BOW COUNTY.

The yearly returns made for taxation to the assessors of the county, as required by law, give the net earnings of the various Butte companies for the year 1896. The figures for these net earnings are given below:

Anaconda	$4,375,010
Boston & Montana	2,630,470
Montana Ore Purchasing Company	160,000
Butte & Boston	86,895
Colorado Company	48,975
W. A. Clark's eight mines	35,870
Alice Mining Company	40,025
P. A. Largey	2,810
James A. Murray	2,635
Arlington Mining Company	1,760
Lexington	1,115
Moulton Mining Company	935
Total	$7,386,700
Total for 1895	3,631,595

The list is not yet complete, as the Parrot Company has not yet filed its report. Taking into consideration the large amount expended in improvements, development work and new machinery, the net earnings were large.

ANACONDA COPPER MINING COMPANY.—The new engine to be used at the 1,400-ft. level of the Green Mountain mine is rapidly being placed in position. It is a first-motion engine with flat cable and was constructed especially for use in mines, all portions of it being made as compact as possible to take up the least space. It will be used for the purpose of developing the shaft. It was at first intended to sink the shaft an additional 200 ft., but since the installation of the big engine it has been decided to sink 400 ft., making the total depth of the shaft 1,800 ft., 300 ft. deeper than any mine in the camp The High Ore shaft, however, is being rapidly developed and will possibly be 2,000 ft. deep before the Green Mountain reaches 1,800 ft.

BUTTE & BOSTON MINING COMPANY.—The deed conveying the property held by the old company to the reorganized concern is said to have been the largest transfer of mining property that ever took place in Montana. The following mining claims which the company owns entire or in part, were included: East Gray Rock, Blue Jay, May, Wedge, West Gray Rock, Sister, Lone Tree, Chicago, Buenos Ayres, Wappela La Plata, Baltic, Never Despair, Ensenada, Amy & Ida, Silver Bow No. 2, Crotch, Michael Davitt, Delmonte, Wild Bill (one-fourth), Smelter, Snohomish (one-half), Belle of Butte, Midnight, Missoula, Transit, Josephine, Gabriella, Tramway (two-thirds), Silver Bow, Atlantic, Flay, Free for All, Allie Brown, Alexander. Besides these the company owns several pieces of placer ground, among which is the property known as the Harrington placer. In the deed of conveyance mention was also made of several valuable water rights, the mill, smelter and other real and personal property.

ST. PAUL & BUTTE MINING COMPANY.—The annualmeeting of this company was held June 15th, and the following directors elected: W. W. Allen, J. H. Morony and George J. Mitsch, of St. Paul; P. Martin, George Washington, D. J. Charles and J. F. Kramer, of Butte. The directors met later, and elected W. W. Allen as president, J. F. Kramer, vice-president, and D. J. Charles, secretary and treasurer.

(From Our Special Correspondent.)

BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—A large body of high-grade copper ore has been encountered south of the Leonard shaft. It has been cut on the 400, 500 and 800 ft. levels. Crosscutting is in progress on the 600 ft.

EVELINE.—This mine, located about one-half mile west of Walkerville, is operated under lease and bond by Pat Mullins. Regular shipments are made of silver-gold ore running over 100 oz. silver and $20 gold per ton from the drifts. The shaft is down 300 ft. and sinking is contemplated.

GOLDSMITH.—This mine, located in the city limits of Walkerville, is operated by the same parties as the Eveline. Crosscutting is in progress for the south vein, which has been such a rich producer in the past. The rock is extremely hard and progress is not rapid.

NEVADA.

STOREY COUNTY—BRUNSWICK LODE.

CHOLLAR MINING COMPANY.—The official letter for the week ending June 12th says, in part: Incline shaft No. 1 has been sunk 10 ft. for the week, making its total depth 941 ft. on the slope. The bottom is in porphyry. 300-ft. level—The openings above this point are yielding as usual, the only mark of difference being a small falling off in the grade of the ore. Have saved from all points and shipped to the Nevada mill during the past week 219 tons and 1,250 lbs. of ore sampling as follows: Car sample, gold, $10.19; silver, oz., 11·29. Wagon sample, gold, $13.67; silver, oz., 13·04. Battery sample, gold, $15.45; silver, oz., 15·31 per ton.

STOREY COUNTY—COMSTOCK LODE.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The official statement of the work done in the mine for week ending June 12th is as follows: 1,000 level—West crosscut No. 1 has been advanced 14 ft., passing through harder porphyry showing clay seams; total length 323 ft. 1,550 level—The double compartment incline upraise No. 1 has been carried up along the footwall 12 ft.; total height 133 ft.; top of opening in porphyry, with quartz in the lower half of the face assaying from $5 to $8 per ton. 1,650 level—From the ninth floor south drift the upraise has been carried up 10 ft., passing through a quartz formation assaying $1 to $2 per ton; total height 64 ft. From incline upraise No. 1 the upraise has been carried up on the footwall 9 ft., passing through ore showing an average width of 1 ft. of ore; total height above the sill floor 63 ft. Our openings in the top show a length north and south of 10 ft. and a width of 1 ft. of ore. The average assays from all around the top of this opening, that is north, south and west, is $25 per ton. Along the south end of the upraise, from the sill floor upward for 50 ft., we have worked south about 12 ft., where the ore in the face shows an average width of 1 ft., assaying from $40 to $50 per ton. We have extracted from this point and from the north drift from No. 2 upraise 134 tons of ore, assaying, per mine car samples, $78.84 per ton. North from No. 2 upraise we have upraised 13 ft., passing through a streak of ore 2 ft. wide, assaying from $20 to $90 per ton: total height 27 ft. on the slope above the sill floor. In the top of this opening the ore is 2 ft. wide, assaying about $100 per ton. Along the north end of our work there is a clay slip which apparently cuts off the ore to the north. The total extraction of ore for the week amounted to 134 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was $76.61 per ton.

NEW MEXICO.

BERNALILLO COUNTY.

A dispatch from Albuquerque states that R. G. Balcomb and R. T. Fulton, Colorado mining men, and E. Eustice, an Eastern capitalist, have closed the deal for a big tract of valley land at Algodones, about 25 miles north of Albuquerque, and filed articles of incorporation. Mr. Balcom states that they will lay off a town and will soon erect one of the largest smelters and reduction works in the Southwest. Algodones is only a few hours' drive from the Cochiti mining district.

SANTA FE COUNTY.

AMERICAN TURQUOISE COMPANY.—The Tiffany group of turquoise mines have been sold under a mortgage and bought in by some of the old owners,

who have organized a new company to operate them.

TAOS COUNTY.

EDISON.—At this property, near the Midnight, a large consignment of ore sacks has arrived and preparations are being made for immediate shipping. There is probably 1,000 tons of ore on the dump being sorted and classed, preparatory to being placed in the sacks. The formation is porphyritic quartz, with a pay streak 3 in. wide, which carries a value in gold of $600. From the mouth of the tunnel to the first crosscut it is 250 ft. A drift on another vein carries a tunnel for a distance of 70 ft. An upraise for a distance of 90 ft. connects with a tunnel run above on a vein which has been drifted in 185 ft., with a 40-ft. upraise on another vein. The management is now pushing the main crosscut below through the vein to cut the hanging wall. The upper workings show an ore streak on hanging wall which has never been cut from below, and work is being pushed to crosscut same from below at a depth of 91 ft.

MEMPHIS.—This property, owned by C. C. Cotton, deputy United States mineral surveyor, situated about 4½ miles from Red River, is ready to make the first shipment. A number of recent assays picked at random from the upper and lower workings give from $85 to $245 per ton, with a pay streak 31 in. in width. This is a tunnel 250 ft. long on the lower workings, and 35 ft. on the upper, with a 20-ft. shaft.

MIDNIGHT.—This mine, in Red River District, has about 800 ft. of workings, all told, 200 ft. of which is a shaft. There is an 18-in. vein which, it is said, assays $800 across the face. The company has the only steam hoist in the neighborhood. The pay roll amounts to about $2,000 per month and shipping is about to begin. Fourteen of the stockholders from Cleveland, O., recently paid a visit to the property, and, it is said, a cyanide plant has been determined upon.

NEW YORK.

HAMILTON COUNTY.

ADIRONDACK GRANITE COMPANY.—This company has commenced active operations at its quarries 4 miles north of Northville. The capital stock of the company is $150,000, which is principally held in Chicago. A force of men is now engaged in quarrying the granite, which is claimed to be a fine grade for building and monumental work.

ROCKLAND COUNTY.

LONG CLOVE TRAP ROCK COMPANY.—The object of this new corporation is to quarry stone near Haverstraw, on the west bank of the Hudson. Capital stock, $75,000. Directors—John D. Miller, Daniel J. Brennan, Jr., and Augustin Fuller, New York City.

OHIO.

PIKE COUNTY.

SOUTHERN OHIO STONE COMPANY.—Notice is given that this company has been incorporated by C. W. Risley, S. B. Williams, Z. T. Herndon, Charles Q. Davis and James B. Townsend, nearly all of Columbus and Lima. The company will operate stone quarries along the line of the Ohio Southern Railway.

OREGON.

JACKSON COUNTY.

ELK CREEK DISCOVERIES.—For several weeks reports have been current of a big strike on Elk Creek, says the *Oregon Mining Journal*. It is only, however, within the past few days that these reports have taken definite shape, and they have created a great flurry in mining circles. It appears that last fall a couple of expert Colorado prospectors started up Elk Creek in search of the source of supply of the gold they found along the creek. Before they had accomplished anything definite, the advent of the rainy season caused them to cease their labors. A month ago they resumed their search, which resulted in their finding a deposit of ore on the side of a mountain, close to the creek, about 16 miles from where the creek enters the South Umpqua. This deposit lies on the ridge which separates the waters of Rogue River from those of the Umpqua, 20 miles west of Crater Lake, and about 65 miles northeast of Grants Pass. Those interested in the discovery are, besides the two prospectors before mentioned, Peter Applegate and sons, of Central Point; Hugh McKenzie, of Grants Pass, and a Mr. McKennon, of Portland. Ten claims have been located covering about 200 acres. The gold-bearing stratum consists of a whitish, soft, chalk-like substance, impregnated with fine grains of quartz. The gold is very fine and not visible to the naked eye. The ground located has been fairly well prospected on the surface, and the returns have been excellent. Every pan has shown from 10 to 100 colors and in some instances as much as 50c. worth of gold. The underground development, so far, consists of only a 10-ft. tunnel and several 4-ft. prospect holes. But in each case the surface indications were confirmed.

PENNSYLVANIA.

BLAIR COUNTY.

JUNIATA LIMESTONE COMPANY.—Operations have been resumed at the extensive quarries of this company, at Carlin, after six months' idleness. Employment is given to 100 men.

NORTHAMPTON COUNTY.

NORTHAMPTON HARD VEIN COMPANY.—This company and Theodore Whitesell & Company, slate operators at Belfast, have notified their several hundred men that the quarries will shut down at the end of the present month for an indefinite period. There is unusual dullness in the trade for this season of the year and as most of the companies in the slate belt have their banks filled with slate, for which there is no demand, more suspensions will probably follow.

PIKE COUNTY.

BAOBA BLUE STONE COMPANY.—This company has been organized to work the quarries at Baoba and Glen Eyre, formerly owned by J. F. Kilgour. The officers are: Richard Outwater, president; John F. Kilgour, manager.

SCHUYLKILL COUNTY.

CAMBRIDGE SLATE COMPANY.—The object of this new company is to quarry slate near Pottsville. The directors are D. R., B. F. and J. R. Jones, Shenandoah; Catharine Pierce and J. C. McGinnes, Frackville; W. Wilhelm, Pottsville; D. D. Jones, Slatington.

YORK COUNTY.

YORK & PEACH BOTTOM SLATE COMPANY.—This company has been incorporated by Edward M. Vandersloot, N. Sargent Ross, Howard Proctor, S. A. Williams and Philip H. Close, to mine and quarry slate, stone or metals, and manufacture the same into merchantable products. The principal office of the company will be at South Delta. The capital stock is $50,000.

SOUTH CAROLINA.

CHARLESTON COUNTY.

BERKLEY FERTILIZER COMPANY.—This company, of Charleston, has decided to mine rock in the Coosa River. B. F. Kramer has contract for erection of the plant. Several hundred hands will be employed.

SOUTH DAKOTA.

CUSTER COUNTY.

CROWN.—The ore in these mines, on Castle Creek near Custer, of which there is much in sight, averages $12 per ton, and an authority in that section says it can be mined, milled and concentrated at a cost not exceeding $1 a ton. The Crown group is the property of F. D. McNickle & Company.

LAWRENCE COUNTY.

DACY SHAFT.—Operations have been temporarily suspended on this Ragged Top property for the purpose of making repairs on the engine and machinery and of putting in a new and longer cable. The shaft is now down 400 ft., and the owners declare their intention of going down to quartzite if they have to sink 1,000 ft.

ELKMO.—For some time past Evans & Evans have had a small force of men at work on their Elkmo ground, a short distance north of the Deadwood & Delaware smelter, and they have uncovered a 6-ft. ledge of ore, of a similar character to that being taken out on Iron Creek. They have been drifting into the side hill, and the strike was made just below the limestone, with which the ore body comes in contact. Much of this limestone bears gold in paying quantities, and the Deadwood & Delaware smelting people are said to be handling it at a profit at the present time.

HIGHLAND.—A 3-ft. ledge of ore assaying from $15 to $30 has been opened up upon this ground on Iron Creek, the property of Major Wells and associates. The ore is being piled on the dump, as no profit would accrue therefrom after the long haul now necessary to reach rail connection. An electro-cyanide plant on Anna Creek is spoken of that will treat $10 ore at a profit.

SUNNYSIDE.—Hawgood, Harris & Sons have, it is said, made another rich strike on this ground, in the Bald Mountain District, which they expect to give returns of about $100 per ton. They will soon make a shipment.

PENNINGTON COUNTY.

A mine located about five miles west of Rochford, discovered by August Oberg, is being developed and is making a good showing. A crosscut of 40 ft. has been made in ore and neither wall has been found. The ore is of a hornblende nature, and at a depth of 6 ft. assays from $4 to $6 per ton, free milling.

UTAH.

(From Our Special Correspondent.)

GOLD MINING CONVENTION DELEGATES.—Governor Wells has appointed delegates at large to the International Gold Mining Convention, to be held in Denver on July 7th, 8th and 9th. All phases of Utah mining are well represented by the appointees: Messrs. John Dern, A. W. McCune, K. A. Andrews, Hartwig A. Cohen, Joseph Smith, James Chipman, Angus M. Cannon, George W. E. Dorsey, Marcus E. Jones, A. Jessen, Ben R. Heywood, Ben Hampton, R. C. Chambers, A. F. Holden, Junius F. Wells, C. C. Goodwin, E. A. Wall, L. U. Colbath, John Treweek, George H Robinson, A. Hanauer, John J. Daly, Elias Morris, F. M. Lyman, Will G. Nebeker, Simon Bamberger, Jesse Knight, David Evans, Heber J. Grant and C. E. Loose. Considerable interest is at last being aroused over the objects of this gathering, while the conviction that it will prove an advantage to the cause of mining is growing. Utah is not almost exclusively a silver-lead region, as the popular illusion has it, a notion which cannot be dispelled too soon. During the past 10 days there have been more noted consulting mining engineers in Salt Lake than at any time for years. They are here, and in nearby States, investigating gold and copper propositions that are just now peculiarly attractive to capital. Every mining State should see to it that its resources are given due recognition at this convention.

SHIPMENTS FROM SALT LAKE CITY.—During the week ending June 19th there were shipped East 24 cars, 1,014,070 lbs. lead-silver bullion; 2 cars, 95,832 lbs., copper bullion, and 32 cars, 678½ tons, lead-silver ore.

SILVER-LEAD DISTRICTS.—A slight but substantial improvement is noticeable in the large shipping Silver-Lead districts. Particularly is this true of Tintic, where more men are at work underground than on the first of the month. What concessions, if any, have been made, either in freight or treatment, or both, are not known, but complaints are fewer and less vehement. The powder situation is in process of adjustment. At Bingham, while the lead-silver properties show a little more life, there is more and more evidence of a metamorphose, at least in large part, to copper and gold, and the same change is noticeable—only, perhaps, in less degree—in Park City mines.

BEAVER COUNTY.

(From Our Special Correspondent.)

TRUE FISSURE GOLD AND COPPER MINING COMPANY.—This is a new corporation, with capital stock of $250,000 divided into shares of a par value $1, launched June 16th. Officers and directors are: J. L. Thomson, president; S. G. Adams, vice-president and treasurer; R. S. Adams, secretary; C. S. Humphery, all of Salt Lake; C. C. Higgins and Francis C. Hall, both of Mercur. The realty is composed of the Bessie, Annie H. and Mayday claims in the Beaver Lake mining district. Systematic exploration is to be continued this season.

IRON COUNTY.

(From Our Special Correspondent.)

CHARLIE ROSS.—At a depth of 120 ft., the lowest workings, a good 10 in. seam is exposed in the vein, carrying $90 gold. A whim has been ordered. This is not the only State Line property where the difficulties of being distant from rail traffic are acutely felt.

CREOLE.—Knight Brothers, of Provo, who bonded this ground a few weeks since, have every cause for felicitations on the soundness of their judgment. The tunnel is in ore, top, sides and bottom. It is claimed that very nearly, if not fully, $24,000—the price of the two-thirds interest—already is in plain view. Newel Knight was in State Line last week when he made the first payment.

OFER.—Superintendent James Clark gives confirmation to the report that Walker Brothers, the Salt Lake bankers, have a 30-day option on the Ofer group; price not made public. Returns on first ore shipment, sent out a fortnight since, very nearly tallied with expectations.

STATE LINE MILLS.—On the incoming of the stage—from Milford, Beaver County, 80 miles distant—one day the past week, the glad tidings that the first mill for the district was on the road were made known. There was glorious rejoicing. A hotel, 2 stores and 10 houses are being built.

JUAB COUNTY.

(From Our Special Correspondent.)

TINTIC SHIPMENTS.—For week ending June 19th no concentrates were marketed. The ore carloads were: Ajax, 2; Bullion-Beck, 20; Centennial-Eureka, 5; Buckeye, 1; Four Aces, 1; North Star, 6; Sioux, 1; Swansea, 1; South Swansea, 7.

ALASKA.—A steam plant was installed a fortnight ago, since which time the shaft has been unwatered and sinking resumed. On June 19th the shaft was down 156 ft. An ore chute is looked for in the vicinity of 200 ft.

FOUR ACES MINING COMPANY.—On Monday, June 14th, the annual meeting was held in Salt Lake City, resulting in the election of officers and directors for current year, viz.: H. E. Booth, president; George Rhode, vice-president; John G. Gray, treasurer; J. R. Slater, secretary, and David R. Gray. Reports presented showed company affairs in excellent condition, while the mine is marketing sufficient ore to yield a small margin over expenses, and its future never appeared so hopeful.

GEMINI.—It is never easy to learn anything of the properties controlled by John Q. Packard, but exceptions now and then pleasantly prove the rule. That a contract with the Germania smelter has been entered into seems an open secret, and soon shipments will be in order. In the past eight months a large amount of ore was uncovered, none of which has been marketed. Undoubtedly more men will be put to work.

MAGGIE NO. 2.—Jesse Knight has just purchased this claim, immediately below the Godiva, for $500, to be patented in short order. The point of interest in the item is that it seems wherever Mr. Knight goes after paying mineral on Godiva Mountain he makes a valuable uncovering.

NORTHERN SPY.—A 500-ton lot of low-grade ore is to be tested at the Sioux mill, and if a satisfactory saving is achieved it will be followed by other shipments. This ground is worked under lease by Hyrum Beck and others.

SOUTHERN EUREKA.—Shaft is down 375 ft. and crosscutting will be started at 500 ft. Manager W. F. Patrick intimates that this important exploration undertaking is to be vigorously pushed throughout the season.

PIUTE COUNTY.

(From Our Special Correspondent.)

SEVIER GOLD MINING COMPANY.—On June 16th, at Salt Lake, the annual meeting was held, resulting in the choice of Charles Lammersdorf, president, treasurer and manager; Alonzo E. Hyde, vice-president and secretary, who with Geo. Arthur Rice, Thomas Deaddon and Mrs. Charles Lammersdorf, compose the directorate. Professor Maynard completed his examination of this and adjoining ground, 10 days since, and, after devoting three days to Salt Lake, quietly departed for San Francisco. No particulars are given out as to the status of the pending sale, though from certain intimations gathered here it is probably off.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

BLACK DOG.—The old dumps of this Bingham property, several thousand tons, are being concentrated at the Heaston mill. A good grade lead carbonate product is turned out. Odin & Anderson are the lessees.

NIAGARA.—Col. Heffron reports that the new tanks at the cyaniding mill enable him to put through about 50 tons a day. His success in winning the values from these gold low grades has put a fancy price on several Bingham properties that, until a year ago, were thought of no particular moment. To-day it is quite evident that cyaniding is in its infancy here.

TIAWAUKEE.—Lessee C. H. Roberts has reason to feel encouraged from the quality of ore he is bringing to the surface. There is strong likelihood of Tiawaukee figuring on the list of steady shippers.

WINNAMUCK.—Manager Charles W. Watson is advertising for bids for the sinking of 120 ft. on main incline, which will give a depth of 420 ft. A 75-H. P. boiler is a new addition to the mine plant.

TOOELE COUNTY.

(From Our Special Correspondent.)

CAMP FLOYD.—Owing to the uncovering of the strong body of paying mineral in La Cigale, the owners of Camp Floyd group, near Five Mile Pass, are about to start work once more. The same cherty lime footwall can be followed from West Dip around the foothills to this ground. A mineralized body, 20 ft. thick, carrying $3 gold, is exposed, and further development, it is believed, will find paying stuff in quantity.

GEYSER-MARION.—A mill clean-up of over $9,000 of cyanide product was made June 18th. On the following day the directors announced the June dividend—$9,000—which is liable to be increased to $15,000 for July.

GOLDEN GATE.—Another rumor of the sale of Golden Gate caused a spurt in Mercur realty and in undeveloped claims. Mr. Cohen, just back from De Lamar, Nev., states there is no foundation for this latest report.

HERSCHEL.—Good progress is made in driving the tunnel, now in 1,700 ft. This is one of the most encouraging prospecting ventures of the Mercur area.

MERCUR.—President Dern was at the mine on June 15th with Prof. George W. Maynard—his first visit. Mr. Maynard was impressed with this remarkable property, even more so with the company's mill at Manning, now cyaniding 300 tons in 24 hours.

VANDERBILT.—Hon. Thomas G. Merrill was in camp last week. For some time four men have been emloyed and soon a larger force will be at work.

VICTOR.—Recently a 5 to 7-in. seam of cinnabar was exposed 30 ft. from the surface, thought to be of promise. There is a strong showing of quartz and exploration is being actively advanced.

UINTAH COUNTY.

(From Our Special Correspondent.)

VICTORIA.—A week ago, the Victoria, better known among Western mining folk as the Dyer Copper mine, was sold by Deputy United States Marshal Berry, under decree of U. S. District Court of Utah, to James L. Gates, of Milwaukee, for $65,000. Mr. Gates states he is the sole purchaser. The mine is situated on Diamond Mountain, 25 miles north of Vernal, not far from the Wyoming line. A report is current that active exploration will be resumed this season.

VIRGINIA.

WYTHE COUNTY.

W. D. Blevin has discovered coal on his property, near Crockett Depot, and will probably develop same.

WASHINGTON.

KING COUNTY.

(From An Occasional Correspondent.)

SEATTLE MINING BUREAU.—A mining bureau in connection with the Seattle Chamber of Commerce has been organized.

SEATTLE'S SMELTER.—The location at Seattle of the largest smelting and refining plant on the North Pacific coast has at last been definitely decided upon. The negotiations were closed June 12th between W. H. Remington of Salt Lake and William Selover, of Portland, representing the Occidental Smelting and Refining Company, and Hon. Thomas Burke and Hon. John Leary, representing Seattle citizens who have raised a subsidy for the plant. It is to be a 4-stack, 400-ton plant, with a refinery and all of the latest improvements. The roasting plant will include a large Wethey multiple, rectangular calcining furnace, having a capacity of 50 tons in 24 hours; four 17x75-ft. reverberatory furnaces, and two Buckner roasting furnaces. The contract requires the plant to be ready for operation within nine months.

SNOHOMISH COUNTY.

(From an Occasional Correspondent.)

FORTY-FIVE MINING COMPANY.—A pack train of 37 horses has commenced transporting ore from the Forty-five mine over the mountain to Silverton, a distance of about 5 miles. One round trip is made daily. This company has just completed a substantial warehouse, stable and office building at Silverton, is building a small sawmill at the mine, gives employment at the present time to 25 men, and is taking out the best grade of ore as yet uncovered in the country, the high grade sampling $100 to $120 and the second grade $40 to $50 per ton. The ore body ranges from 3 to 7 ft. in width. A wire rope tram 13,000 feet in length, to the Everett & Monte Cristo Railroad, is a much needed accessory that will be added this season.

GOLDEN CORD.—Work has been resumed at this mine, owned by Wilmans Brothers, with two shifts of men. Former lessees having removed everything "in sight," a new level is to be run. It is reported that a plant for the special treatment of Golden Cord ore is to be erected this season.

INDEPENDENT.—Plans for a concentrator for this mine, at Silverton, are being prepared. The property was recently examined by E. P. Crooker, representing New York people.

MONTE CRISTO OUTPUT.—The Pride-Mystery output is now upward of 1,600 tons a week, and for several weeks has averaged over 1,200 tons. For the week ending June 2d the output of the United Concentrating Company's plant, at Monte Cristo, was 17 carloads (428 tons) of concentrates from Pride-Mystery ore. From 110 to 120 men are on the payroll at this mine. After being blockaded by snow for several months the tram is again in operation. Development work was continued all winter and several carloads of ore sampling $25 to $40 per ton are ready for shipment.

SIDNEY MINING AND REDUCTION COMPANY.—This company expects to add the Argonaut to the list of Monte Cristo shippers by September 1st. This was one of the first discoveries of the district and joins the Golden Cord on the same vein as the Mystery & Pride. On the Argonaut (formerly known as the Sidney), the vein is a large, well-defined contact fissure between walls of granite and slate. The ore is an arsenical iron carrying gold, sampling $5 to $14, and concentrating as high as six into one. The best ore is being sorted for shipment direct; the remainder will be hauled to the concentrator. Two shifts are driving crosscuts from the adit tunnel at a depth of 60 ft. to determine the width of the ore body.

WEST VIRGINIA.

SUMMERS COUNTY.

M. M. Warren and others have formed a company for the purpose of sinking oil wells near Stockyards.

WISCONSIN.

The commission created by the legislature to complete the geological survey of the State met in Madison recently, and organized by electing the following officers: President, C. K. Adams; vice-president, E. E. Bryant; secretary, Prof. C. Dwight Marsh; treasurer, J. Q. Emery. It was decided to enter upon the investigation of building stone as found in the State. For this work several experts will be employed who are to work under the supervision of Prof. E. A. Birge.

WYOMING.

CARBON COUNTY.

OVERLAND PLACER COMPANY.—Work is being pushed at this company's placer mine at Rockdale. An additional 500 ft. of fluming has been added to accommodate the large quantity of earth now being moved. The two giants operating day and night are handling close to 2,000 cu. yds. of dirt each 24 hours. Over 20,000 cu. yds. of gravel have been passed through the boxes since the company began work a few weeks ago. Two nozzles are now working on the east side of Emigrant gulch and are plowing into a bank with a face of 20 ft. vertical height. The power of two 3-in. streams has a pressure of something little short of 100 lbs. to the square inch. The capacity of these nozzles is 15 cu. ft. of water per second. They will be reinforced in a short time by the construction of a 3-mile ditch from Rock Creek, carrying 60 cu. ft. of water per second, and the laying of half a mile of 15-in. pipe, which will accommodate two more giants; the entire plant then having a capacity of 3,500 cu. yds. of earth daily. The ground averages about 75c. in gold per cubic yard.

FOREIGN MINING NEWS.

AFRICA.

RHODESIA.

According to the *Rhodesian Times* of April 30th, the latest date received, at that time a good deal of anxiety existed with regard to the unsettled state of Mashonaland, and the practical stoppage of mining operations in consequence. Meetings had just then been held of the Chamber of Mines, of the Prospectors' Association, and of the Sanitary Board, at the former of which it was asserted that the official statements made as to the condition of Mashonaland "have caused a totally erroneous idea of the condition of the country to be entertained in Europe," as "the country is as unsettled as it was some months ago, and it is absolutely impossible that mining work can be proceeded with." The Prospectors' Association also "repudiated the reports regarding the pacification of Mashonaland"; and it was stated that it was unsafe for prospectors to follow their calling, that the present forces were totally inadequate to cope with the rebels, and that Imperial aid was necessary. The *Times* thus sums up the position; "The men have suffered from the rains, as expected; there has been loss of horses and draught animals; the native attitude is still defiant. But the moment has now been passed when it was expected that the government would declare their programme for the dry season. May is now opening, and in lieu of any indications of a vigorous policy, we see nothing but the quiet routine of the rainy season. In lieu of the large forces of men and horses which it was expected the Chartered Company would be pouring into the country at this present moment, we learn that only some 150 men are on their way up. In such circumstances the work of developing the country is virtually at a standstill, and the prospectors demand that the Chartered Company should provide at least a sufficient number of men and horses to permit of the safe working of the mines, and that above all the railway should be pushed forward to Salisbury, for until a more settled condition of things exists in Rhodesia, it would be futile to expect results from mining operations, or even that any work should be done upon the properties.

TRANSVAAL.

WITWATERSRAND GOLD OUTPUT.—The total production of the mines in May is reported at 248,305 crude oz. gold; a gain of 12,607 oz. over April, and 53,297 oz. over May, 1896. For the five months ending May 31st the production has been as follows:

	1895. Crude oz.	1896. Crude oz.	1897. Crude oz.
January	177,463	148,178	209,832
February	169,295	167,018	211,100
March	184,945	173,952	232,067
April	186,323	176,707	235,698
May	194,580	195,008	248,305
Totals	912,606	860,863	1,136,902
Totals, fine oz.	744,686	702,464	927,712

The larger yields reported by different companies for May were: Robinson, 1,239 oz.; Ferreira, 13,186 oz.; Crown Reef, 12,988 oz.; Langlaagte Estate, 12,014 oz.; City & Suburban, 11,506 oz. Nearly all the old companies showed a gain.

ASIA.

INDIA.

COLAR GOLD FIELD, MYSORE.—The total gold output reported from the mines in May was 32,099 oz. For the five months ending May 31st the production was 154,663 oz., against 137,281 oz. for the corresponding period in 1896; showing an increase this year of 17,382 oz., or 12.7%. The production reported this year for the leading mines was: Champion Reef, 50,216 oz.; Mysore, 48,970 oz.; Ooregum, 23,441 oz.; Nundydroog, 21,566 oz.; Coromandel, 5,200 oz. All show an increase except the Ooregum, which is now running on lower grade ore than last year. These Indian companies have made a remarkably good showing in the point of dividends. The Champion Reef Company has in three years paid 167½%, or an average of nearly 56% per annum; the Coromandel Company, a new concern, has paid a dividend of 5%, and it is expected to make a larger payment shortly; the Mysore Company has since May, 1886, distributed 537½% in cash and 50% in Champion Reef shares on the nominal capital of the Mysore Company at the time, making an average for 11 years of over 50% per annum; the Nundydroog Company since October, 1888, has distributed 165%; while the Ooregum Company from April, 1891, has paid 217½% on its ordinary shares and 287½% on the preference shares. The shareholders in the respective companies have every reason to be satisfied with these results.

CANADA.

BRITISH COLUMBIA—EAST KOOTENAY DISTRICT.

FORT STEELE COUNTRY.—A valuable discovery in the vicinity of Elk River is said to have been made. The surface showing is reported to be large and development work is not difficult. The Blue Grouse and Waterfall claims on Sand Creek are being developed by Judge Langly, and the Lady Ann group, on Six-Mile Creek, is being developed by Barney Quinn. A 5-ft. lead of gray copper has been found on Diorite Creek and is traceable for 2,000 ft. There is also a report that the North Star lead has been struck about a mile to the southwest, which, it is said, is about 20 ft. in width and splits into two leads about 1,500 ft. from the point of discovery.

BRITISH COLUMBIA—KOOTENAY DISTRICT.

LILLOOET, FRAZER RIVER & CARIBOO GOLD FIELDS COMPANY.—During the month of May the concentrator at the Lanark mine, near Illecillewaet camp, owned by this company, ran continuously for 25 days, having been delayed 6 days owing to slides and an accident to the pumps. The mill treated about 3,200 tons of ore, and produced 430 tons of concentrates, the gross value of which was $35,000. The concentrates were all shipped via Vancouver to the Selby Smelting and Lead Company of San Francisco. The output during May is said to be larger than that of any other mine in the province, and the output will shortly be largely increased. A

shaft will be sunk from the 480 ft. level to the 1,000-ft. level, and an electric hoist is being put in. The mine is now lighted by electricity.

BRITISH COLUMBIA—SLOCAN DISTRICT.

IBEX.—The bond on this claim (Brennard group) has been taken up at Kaslo and the balance of $22,-500 paid. The new company now has a clear title to the property, and will develop it as fast as possible. Inspector Jarvis of the Northwest Mounted Police is one of the directors.

(From Our Special Correspondent.)

During May there were 474 new mineral claims located in the Nelson office.

PAYNE.—The owners of this mine will soon be shipping 35 or 40 tons of ore per day. The greater portion of this will be shipped to Pueblo, Colo., the remainder going to the Puget Sound Reduction Works, at Everett. It is not unlikely that monthly returns of profits will hereafter be made.

PUGET SOUND REDUCTION COMPANY.—This company, of Everett, has purchased the Whitewater mine in the Slocan District, B. C., from which it will hereafter obtain its supply of lead ore. The consideration is said to have been $500,000. The mine has paid $40,000 in dividends. The new Ropp roaster at this smelter was fired June 9th, doubling the capacity of the plant. Upward of 10,000 tons of concentrates from the Pride & Mystery mines at Monte Cristo have accumulated at the smelter during the past year.

BRITISH COLUMBIA—TRAIL CREEK DISTRICT.

LE ROI MINING AND SMELTING COMPANY.—The Edward P. Allis Company, Milwaukee, Wis., has closed a contract with this company for machinery for the new 300 ton smelter. The outfit will consist of two 38-in. × 120-in. blast furnaces, one Holthoff-Wethey calcining furnace, one 14 in. × 24-in. reverbera tory matte smelting furnace, two No. 7 Connersville blowers, machinery for 300-ton sampling mill, Reynolds Corliss engine, boiler, etc., necessary for a complete and modern smelter. The same will undoubtedly be completed and in full running order before the first of next year.

(From Our Special Correspondent.)

CLIFF.—D. R. Morrison, the assayer and analyst in charge of this mine in the absence of one of the principal owners and manager, S. M. Wharton, furnished the following information concerning this property: There are two tunnels which have been run in a distance of 600 and 400 ft. respectively. The lower tunnel, which is the longer one, has been largely exploratory, though it may be said that ore was first encountered at no great distance in the tunnel. The management after much careful work ascertained the location of the large ore body which this tunnel more or less circumscribes, the tunnel having encountered it in two distinct places. The lower tunnel is also on ore, as are also two shafts. During the week ending June 5th four carloads of ore were shipped, and the following week two carloads more were shipped, making 120 tons, or about 181 tons up to date for this year. Mr. Morrison, in the absence of the management, could not positively state whether or not these shipments would be regularly continued, but he believed that a good deal of the ore would be shipped to the Tacoma and Nelson smelters, where the shipments have already been made. There is a two-drill compressor which gives the power. This is to be replaced shortly by a larger one. A good deal of ore is being stoped. The Cliff is one of the oldest locations in the camp. It is situated on the east face of Red Mountain, at the head of the gulch, and on what is known as the backbone of the camp. It is private property and is owned by S. R. Wharton, G. C. Wharton, John L. Tait and J. R. Cook. These gentlemen have been identified with the camp since it was opened up.

COLONNA.—Development work in this mine is being vigorously pushed by means of the Monte Cristo four-drill compressor. The management is now crosscutting with the view of tapping the ore body at another place.

HOMESTAKE GROUP.—The sale of this property to London capitalists is reported, but the report is yet unconfirmed. There have been so many similar reports which have come from the same source that belief in the truth of this remains suspended. The development of this group on a comprehensive plan, which was outlined in a previous report, if carried out, will indeed be very acceptable news to the camp.

MONTE CRISTO.—This comprises a full claim. It is located on the west slope of Monte Cristo Mountain, nearly opposite the Cliff. A large amount of development work has been done on this property, but the work has been temporarily suspended, the compressor being now employed in developing the Colonna, and it is reported that there is likely to be a consolidation of the two properties.

SOUTH AMERICA.

SOUTH AMERICAN EXPLORATION COMPANY.—This company has been organized in Jersey City, N. J., with a paid-up capital of $10,000. The object of the company is to explore and develop the rubber forests and mining lands in Central and South America. It is said that concessions have already been obtained by Frank C. Nicholas, of Summit, N. J., who has spent two years in the Central and South American forests. John H. Winser, secretary and treasurer of the American Museum of Natural History of New York City, is interested in the new company, and will endeavor to accompany the first expedition, which will start in a few weeks.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 25.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending June 18th, 1897, compared with the corresponding period last year:

	1897. Week.	1897. Year.	1896. Year.
Pennsylvania Railroad.....	63,577	1,558,402	1,679,589

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending June 18th, and for years from January 1st, 1897 and 1896:

Shipped East and North:	1897. Week.	1897. Year.	1896. Year.
Allegheny, Pa.....	47,692	1,068,704	1,125,282
Barclay, Pa.....	622	22,724	20,824
Beech Creek, Pa.....	*68,458	1,733,932	1,491,990
Broad Top, Pa.....	18,347	176,410	201,532
Clearfield, Pa.....	77,506	2,087,764	2,494,604
Cumberland, Md.....	81,119	1,697,676	‖1,566,414
Kanawha, W. Va.....	$54,901	1,520,729	1,468,482
Phila. & Erie.....	801	157,484	32,160
Pocahontas Flat Top.....	†142,597	1,085,773	.....
Totals.....	482,043	9,551,196	8,401,288

Shipped West:	1897. Week.	1897. Year.	1896. Year.
Monongahela, Pa.....	33,842	642,487	487,757
Pittsburg, Pa.....	29,038	801,315	894,332
Westmoreland, Pa.....	37,034	873,391	958,169
Totals.....	99,914	2,317,193	2,340,258
Grand totals.....	581,957	11,868,389	10,741,546

Production of coke on line of Pennsylvania Railroad for the week ending June 18th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 81,980 tons; year, 2,048,477; to corresponding date in 1896, 2,134,317 tons.

† For two weeks ending June 5th. ‡ For week ending June 5th. § For week ending June 7th. * For week ending June 21st. ‖ For year ending June 27th.

Anthracite.

Although less than one week's time remains in which anthracite coal can be bought at present prices, buyers are not placing orders any quicker than before. No official announcement has so far been made by any of the producing companies that a higher schedule will go into effect on July 1st, but there is no doubt that several of them will issue new circulars before that time, and that the others will follow the leaders. Should the increase be officially announced before the first of the month it is believed that a large number of orders would be placed during the few remaining days of June. The month of July is, however, not expected to bring many new orders into the market, even if no increase in price were to be made. Deliveries will be larger if the expected orders are booked before July 1st, but there would be a corresponding lack of new business in that month.

It is reported that several of the companies producing free-burning coals have been on a still hunt for orders for delivery at present prices up to October 1st. That the effect of this upon the trade must be very harmful is evident at once. To the buyer it means that he is not up against the formidable stone wall of prices behind which the companies have been trying so long to fortify themselves, and to the general public it must produce the question "How can this be done if there is a coal trust binding the companies together?"

The question of tonnage for July, it is said, has not been definitely decided. Some producers want 3,500,000 tons, and others are very well satisfied with half a million tons less than that amount. Among the latter class are the free-burning coal men, who do not find the demand for their product approaching the figure they expect for it. Stocks in dealer's hands in New York City are exceptionally low. An estimate shows them to have but 15% of their carrying capacity, yet they show no inclination to fill up at present prices. The situation is one of more than usual interest, and developments during the summer will be watched carefully by everyone connected with the coal industry.

Bituminous.

The Atlantic seaboard soft-coal trade continues quiet, and while the trade feels it, it is taken philosophically with hope for better things the coming season. There was a feeling that bedrock had been reached on all coals and that the season would not hear of any lower ones being made, but it is reported that West Virginia coal has been sold during the week on a basis of $1.52½ at Baltimore. This was probably in direct competition with Pocahontas or New River coals in their own territory, and was accordingly influenced by it. However, it is probably the best thing to have all the demoralization possible this year so as to force some kind of control the coming year. There is practically no new business doing; orders come in very slowly on contract taken, and the complaint is pretty general. Some of the operators who have large contracts on their books which were reported at the time of taking as not having the strike clause attached have been worried somewhat by the manifestations of labor in regions outside of those reaching the Atlantic seaboard. It is believed that a general strike would not be very objectionable to a majority of the operators, who would probably look upon it as a thing that would help put matters on a proper basis. The allies of the Dominion Company in the New England States have been making representations at Washington for the purpose of preventing an increase in the tariff on coal from 40c. to 75c. per ton, claiming this consuming territory to themselves against the Pennsylvania, Virginias and Maryland coal-fields, which have supplied it heretofore

Trade east of Cape Cod is quiet and sluggish, and it is not believed that deliveries on contracts in hand have come up to what was intended. Long Island Sound business is quiet, the trade now merely looking out for what demand comes along. The snap of a few weeks ago seems to have left this trade, the cause—a slight shortage of coal for orders in hand—having disappeared. New York harbor trade is not active, consumers, it is thought, continuing to delay orders a little longer than usual before sending them in.

All-rail business is on the basis of about what it has been, the tonnage being fairly large, not saying anything of prices. Transportation from mines to tide is again in a bad condition. There seems to be more or less blockade troubling it, and orders from the main line roads' superintendents are to hold coal back on the feeders except where it is urgently needed at the piers. Car supply is regulated entirely by the individual operator's handling of the loaded cars at tidewater. In the coastwise vessel market there is a fair supply of both large and small vessels, though the medium-sized vessels are quite scarce and in fairly good demand. The freight rates are not strong and we quote current rates from Philadelphia to Boston, Salem and Portland, 50@55c.; Providence, New Bedford and Sound ports, 50c.; Portsmouth and Bath, 55c.; Wareham, 70c.; Lynn, 65@70c.; Newburyport, 65c.; Dover, 90c. and towage; Saco, 80@85c. and towage; Gardiner, 55@60c. and towage; Bangor, 60@65c. Five and 10c. above these rates is asked from Baltimore, Norfolk and Newport News.

Buffalo. June 24.

(From Our Special Correspondent.)

The anthracite coal trade is a shade more active, as consumers are laying in next winter's stocks for household use. Quotations are nominally unchanged, although concessions are made for large lots; the single-ton business is all done at schedule rates.

Bituminous coal is in better demand, as manufacturers are buying more for the future, anticipating trouble in the mining regions. There is less coal on the tracks, so that the sellers are firmer in their views and do not care to make any concessions of consequence. Lake freights continue to rule low, and the movement is not up to the standard of preceding years to date. The vessel interests this year find transportation of grain, coal, etc., unremunerative and in many cases incur heavy losses.

The movement of coal westward by lake for the week ending June 19th aggregated 51,825 net tons distributed about as follows: 11,800 tons to Chicago, 11,050 tons to Duluth, 18,000 tons to Milwaukee, 5,800 tons to Superior, 1,300 tons to Toledo, 1,475 tons to Racine and 2,400 tons to Marquette. The rates of freight were 20c. to Chicago, Milwaukee, Duluth and Superior; 25c. to Sheboygan, Racine and Marquette, and on private terms to Toledo.

Buffalo has now another railroad; the Wabash system has secured an entrance to our city via the Grand Trunk Railway of Canada, from Windsor to Niagara Falls, thence by the Erie Railroad. This gives the Wabash a continuous line from Kansas City to Buffalo of 963 miles.

About 250 members of the Ohio Coal Dealers' Association paid a brief visit to Buffalo and to Niagara Falls on June 17th. They expressed themselves delighted at the attention they received.

The coal traffic of the Buffalo, Rochester & Pittsburg Railroad is reported to be the heaviest for years. Last month over 360,000 net tons of coal and coke were hauled over the Pittsburg Division.

The contract for 40,000 net tons of run-of-mine bituminous coal for the Buffalo Water Works has been awarded to the Shawmut Coal Mining Company at $1.33 per net ton; also 100 net tons of anthracite at $3.75.

The Natural gas bills for the Fire Department of Buffalo were so large last winter and this spring in the houses that it has been decided to use coal for fuel in future. Natural gas, however, will be used to start the fire under the engines.

Chicago. June 23.

Anthracite.—There has been rather more buying of anthracite coal during the past week, and it looks a little as though a real buying movement was about to set in. Probably the advance knowledge that hard coal will appreciate in price in July had considerable to do with the increased attention given the market. Sales and inquiries from the out-of-town trade has improved, and on the strength of same the market in general is becoming a trifle firmer, though there is as yet some slight concession being made on particularly good business. The receipts of anthracite coal by lake have been much less during May than in the corresponding period of last year, nearly 35,000 tons less having been received.

Bituminous Coal.—The soft-coal situation has been rather better during the past week, quite considerable business having been closed. Inquiries are coming in well and contemplated trade is large, especially in the better grades of domestic fuel. Prices are yet very variable, but with the better outlook a firmer market is expected.

Pittsburg. June 21.

(From Our Special Correspondent.)

Coal.—The market, generally speaking, is nearly at a standstill. As we have before intimated,

there will be nothing of importance done until we have a free Monongahela. The transfer is promised the present week. There seems to be only one little obstacle to be cleared out of the way before the government takes control of the Navigation Company's property. The tone of the market is stronger, but no advance is reported. There is plenty of Pittsburgh coal in the lower markets. At Cincinnati the market is very quiet, with scarcely any movement. Pittsburg coal is held at 5c. per bushel, or 2,688 cu. in. for Second pool, 4@4¼c. for Fourth Pool. The demand seems moderate. Pittsburg slack is 3c. and Kanawha, 2½@3c. Notwithstanding the limited number of miners at work a strike is talked of. The Anderson Mines at Venetia, on the Wheeling Division of the Baltimore & Ohio, resumed on Monday at 54c. These mines have been closed since November.

At Union, Pa., a party of Pittsburg capitalists have optioned a large tract of valuable coal land in Washington township. It comprises about 1,200 acres. It is announced that the Pittsburg parties contemplate buying the tract and developing it immediately.

Connellsville Coke.—The United Coke and Gas Company's plant at Glassport is doing well. The experimental by-product coke plant of the company was inspected by the directors and found to be working successfully. This is the first time since the plant was put in operation that the furnaces have been seen by the directors. Among the capitalists who visited the plant were: W. L. Elkins, R. C. Puyn, Albany, N. Y.; Stephen Peabody and A. C. Humphries, New York City; John B. Parsons, George W. Elkins, of Philadelphia, and Powell Stackhouse.

The trade showed a gain over last week of 1,051 tons in production. The demand from the East and Pittsburg was materially better. The increased demand stimulated production; the report shows 61 ovens fired up. The week's summary shows 10,376 ovens in blast, with 8,001 idle. The production of the week amounted to 104,836 tons, an increase of 1,058 tons; production this week is showing slightly heavier, and a gain is looked for. W. I. Rainey is preparing to build 80 additional ovens. Shipments to Pittsburg, 2,645 cars; points West, 2,306 cars; shipped East, 1,315 cars; total, 6,266 cars.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 25, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending June 26, 1896. F'ces.	Tons.	Week ending June 25, 1897. F'ces.	Tons.	From Jan., '96. Tons.	From Jan., '97. Tons.
Anthracite.	41	25,900	24	13,800	729,838	436,086
Coke.....	135	161,170	107	152,900	4,302,479	3,685,414
Charcoal...	19	6,130	15	3.459	136,280	126,086
Totals....	195	193,200	146	170,150	5,168,597	4,247,586

There has been increased buying of raw iron and steel reported from nearly all the leading markets. The movement is especially large in pig iron, and the demand there has been rather for foundry material than for Bessemer pig. The foundries generally have run their stocks pretty low, but it is not quite certain whether the present buying is due to the coming in of orders or to the conviction that iron is about as low as it can go, and that the present is a good time to put in stocks. Probably both causes have contributed. It is to be noted, however, that the majority of the orders taken are not pressing for early deliveries.

There seems to be some speculative buying, but not so much as recent rumors would indicate. The report noted last week that Russell Sage had taken a large block of Southern iron proves to be incorrect, as we anticipated. The sale of 100,000 tons was closed, but to other parties, and the iron will not be held back, but will be worked off as quickly as possible, and some of it has already been resold for export. The prices named are $6.25 per ton, f. o. b. furnace, for No. 2 foundry; $6 for No. 3, and $5.75 for No. 4 and gray forge.

The demand, such as it is, has not raised prices, and Bessemer pig is even reported a little weaker, though foundry irons are fairly firm at the recent quotations. In most other directions prices are not very steady. An effort is to be made to put up the price of bar iron, but its success is doubtful.

There is some talk of the sale of several Alabama furnaces to an English syndicate, whose representative is said to be now in this country to conduct the negotiations. If the plan is carried out, the reports say, the iron made will be shipped to England. Time will show whether these rumors are correct; at present no one in the trade is willing to verify them.

Sales abroad continue, and have reached an aggregate of some importance to the trade. The present level of prices in Europe is appreciably higher than in this country, and, as indicated by this fact, the mills and furnaces there are all busy and are unable to keep up with their orders. The latest contract of this kind reported is for the steel for the cars of the Central Underground road in London, which was awarded to an American concern, which offered the lowest price and the earliest delivery.

We understand, in this connection, that inquiries have been received as to prices for steel pipe for the works to be undertaken for the water supply of the Coolgardie gold field in Western Australia. It is understood that between 65,000 and 70,000 tons will be needed.

Talk of labor troubles is plentiful, and is causing some uneasiness in the trade. The general movement is toward lower wages, and this is naturally causing a good deal of friction. In some cases reductions have been accepted under protest, and strikes may result later. So far their number has been less than might have been expected. The usual yearly conference between the representatives of the Amalgamated Iron and Steel Association and the manufacturers is being held in Pittsburg this week. The result is still uncertain, but will probably be a compromise, as is usually the case.

New York. June 25.

The local iron market has steadied considerably since our last report, although prices obtained have not advanced, but they are firmer than they have been for some time past.

The market for plates has become stronger in tone, the material needed for a ship now being constructed on the Delaware having been ordered, with the contract for ship plates going to an Eastern Pennsylvania mill, while a lot of boiler plates which are of greater width than ordinary has been ordered of a Chicago mill.

Structural material continues to command attention, contracts aggregating 10,000 tons being under consideration.

Pig Iron.—Local sales agents report a much better condition of affairs than has existed for some time, some claiming an advance of 25c. a ton on all grades while others seem to be satisfied with the prices which have ruled recently, and which they seem to think are being realized without any shading, but bids for future delivery are handled carefully, and at higher level.

The tonnage reported has been unusually heavy during the past 10 days, with indications of still heavier sales in the near future.

A local broker reports a business of 10,000 tons a day during the past week, while another reports a shipment of 2,000 tons to the Eastern States. The Sloss Iron and Steel Company has closed contracts for about 10,000 tons for export to Glasgow, Sheffield and the Continent.

We quote Northern No. 1 X foundry, $12@$12.50; No. 2 X foundry, $11@$11.25; No. 2 plain, $10.50@$11; gray forge, $9.75@$10.25; Southern No. 1, $10.25@$10.75; No. 2, $9.75@$10; No. 1 soft, $10.25@$10.50; No. 2 soft, $9.75@$10; gray forge, $9.25@$9.50; basic, $10 25@$10.50. All prices are for tidewater delivery.

Cast-Iron Pipe.—The demand for cast-iron pipe has continued on the increase during the past week with prices stronger.

Spiegeleisen and Ferro-Manganese.—The inquiry has remained stationary without changes in prices, which remain at: For spiegeleisen, 20%, $19@$19.50 per ton; ferro-manganese, 80%, domestic, $45, delivered at buyer's mill.

Steel Billets.—The local billet market remains quiet, with prices slightly weaker, at about $15.25@$15.50.

Merchant Iron and Steel.—Local agents report a slightly increased business during the past week with prices a shade easier at: Common bars, 1@1·05c.; refined, 1·10@1·25c.; soft steel bars, 1·05@1·10c. Other quotations are: Steel hoops, 1·35@1 40c., base; steel axles, 1·55@1·60c.; links and pins, 1·50@1·60c.; light cotton ties, 50c. per bdl. at mill. All prices are for delivery on dock New York, and are for large quantities.

Plates.—Although prices have not advanced, yet they hold steady, with the demand considerably better than for some time, quite a large business having been closed during the past few days. We quote for universal mill plates 1·15@1·20c. For steel plates prices are: Tank, 1·10@1·15c.; boiler shell, 1·20@1·30c.; flange, 1·35@1·40c.; firebox, 1·60@1·75c., and 2·25@2·50c. for locomotive firebox, according to quality. Charcoal iron plates are 2·25c. for shell, 2·75 for best flange and 3·25 for firebox. Rivets are 3@3 25c. for iron and 1·75@1 85c. for steel. Prices are for tidewater delivery in large quantities.

Structural Iron and Steel.—The demand for structural material has increased during the past week, although prices remain stationary on account of active competition. We quote for angles, 1·10@1·15c.; tees, 1·35@1·50c.; channels, 1·25@1·30c. The price of beams, New York delivery, is 1·25@1·30c. for ordinary sizes, 1·45c. for 20-in., and 1·50c. for 24-in., carload lots.

Steel Rails and Rail Fastenings.—The market continues to improve, although prices remain about the same. We quote: Standard section steel rails, $18@$20 at mill, and girder rails $23. The market for light rails indicates a revival of business with prices for 8, 12, 16 and 20-lb. rails at $28@$33 per ton.

Quotations for rail fastenings are: Angle bars, 1·15@1·20c.; spikes, 1·50@1·60c.; bolts, 1·80@1·90c. for square nuts and 1·85@1 95c. for hexagon nuts. These prices are for carload lots.

Wrought-Iron Pipe.—The demand for pipe has been satisfactory this week, and although prices have not advanced, still a stronger feeling is manifest and discounts are as follows: For plain pipe, out of store: 1/8 in. and over, 67, 10, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10, 10 and 10%. Galvanized pipe, 1/8 in. and over, 55, 10, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10, 10 and 10%. For fair-sized orders these discounts are made with an additional 5% for less than carload lots. For carload lots this additional discount is 7½% to 10%.

Nails.—Wire nails have been in fair demand with prices a shade weaker at $1.50@$1.60, while at mill they remain at $1.35@$1.45. In cut nails trade also continues strong; $1 32 base is quoted as New York price in carload lots with $1.42 for less than carloads.

Old Material.—The demand for old material continues fair with prices stationary. A sale of steel rails for export, at $10 alongside vessel at New York, was made during the past week. We quote old iron tee rails, $11@$12 per ton; old steel rails, $10@$11; No. 1 wrought scrap iron, $10@$11; good machinery scrap, $9@$10, all f. o. b. cars; wrought pipe and tubes, $7.50 per ton; car wheels, delivered at buyer's works, $9@$10; burnt iron, $5@$6; cast borings, $6.50@$7 per ton delivered at mill.

Chicago. June 23.

(From Our Special Correspondent.)

Pig Iron.—The demand for pig iron still continues and it is evident that prices will advance from the improved condition of things. There has been more iron sold in this market during the past three weeks than for any similar period in a long time. One order was received for 40,000 tons, another for 20,000 tons, and a number for less amounts, but large in the aggregate. The Northern furnaces did the bigger part of the business transacted by far, and they still have a hold on the market, as present sales are showing. It is probable that the increased buying of iron during the past three weeks has been because of the anticipated increase in prices and it is quite likely that prices will advance. All of the small buying has been done at full prices, and but little in the way of reduction has been offered to secure the larger contracts. Quotations are as follows: Lake Superior charcoal; $13@$13.25; local coke foundry No. 1, $10.50@$10.75 No. 2, $10.25@$10.50; No. 3, $10@$10.25; local Scotch foundry No. 1, $10.50@$10.75; No 2, $10.25@10.50; No. 3, $10@10.25; Southern coke, No. 1, $10.25@$10.50; No. 2, $9.75@$10; No. 3, $9.50@$9.75, Southern No. 1 soft, $9.75@$10.25; No. 2 soft, $9.75@$10; Jackson County silveries, $13@$15; Ohio silveries, $13@$.15; Ohio strong softeners, $12@$12.25; Alabama car wheel, $15.50@$16; coke Bessemer, $11.50@$12.

Bar Iron.—There have been some large purchases of bars, and the aggregate sales of the past couple of weeks will foot up 40,000 tons. Implement manufacturers are the heaviest buyers. Prices are still disturbed, but those made by a number of the mills are, for common iron 1@1·15c.

Steel Rails.—Rails are in better demand, nearly 8,000 tons having been booked for the standard sections. Sales of lighter rails continue to be made in fair quantities. Rails are still quoted $19@$21, Chicago.

Billets and Rods.—There is more buying in sheet bars than for some time, sales footing up 600 tons having been made. Billets are in somewhat better demand with price of $15.75. Rods are quoted $21.

Structural Material.—There is not a great deal of business in the market at the present time. Small amounts from 100 to 1,000 tons are coming in from week to week. An office building here and there and a few railroad bridges are the most important things in the market at the present time. Prices are: Beams and channels, 1·15@1·20c.; plates, 1·10@1·15c.; angles, 1·10@1·15c.; tees, 1·30@1·40c.

Cleveland. June 23.

(From Our Special Correspondent.)

Iron Ore.—The trade during the past week has not been as active as during the previous week, the entire amount of ore sold not being nearly so large. What has been sold has been of the Bessemer variety. The season has reached that stage when dull and busy weeks alternate, and consequently the dealers are not discouraged over the small business done in the immediate past. All the sales reported were moderate in size, at the following prices: Specular and magnetic ores, Bessemer quality, $3@$3 75; specular and magnetic ores, non-Bessemer quality, $2.50@$2.75; hematite ores, Bessemer quality, $2.50@$3; hematite ores, non-Bessemer quality, $2@$2.50. There has been no change in the shipping rates for several weeks, but the movement of ores is quite active.

Pig Iron.—Notwithstanding the fact that there has been but little pig iron sold during the past week, the market is still steady. The sellers are holding their iron for the same prices quoted a month ago, as they claim the prices are now at rock bottom. Following are the quotations: Lake Superior charcoal, $13.25; Bessemer, $9 75@$10; No. 1, Foundry, $10.50@$10.75; No. 2, $10@$10.25; No. 1, Ohio Scotch, $10.65; No. 2, $10.15; gray forge, $8.75@$9.

Philadelphia. June 25.

(From Our Special Correspondent.)

Pig Iron.—The pig-iron market is better this week in two or three respects. In several transactions a little more iron has been taken, in some instances at higher prices. Deliveries have been called for by several heretofore dallying consumers and finally there was quite an April shower of inquiries since Monday from people from whom brokers are particularly glad to hear. The mill-men have been buying to cover, a most hopeful sign. Foundry men have also made good-sized purchases, in some few

cases deliveries extending over into October for certain makes of iron. Makers have treated their old customers fairly in making prices. We look for a further increase of business next week.

Steel Billets.—Our people have not yet taken action, but are watching Western movements with deep interest for pointers. Large buying is among early possibilities.

Merchant Bars.—We are patiently awaiting the promised improvement. Quotations instead of advancing were shaded in certain transactions this week. Steel bars are 1·10c. and the chances are favorable for a good July business in this branch, according to inquiries.

Sheets.—The volume of business is still below what our mill-men counted on. The suspension for repairs has no influence. Storekeepers did less business than usual. Their stocks have been increased.

Pipes and Tubes.—Agents report work opening up in their territory, out of which orders may result in July.

Merchant Steel.—The amount sold this week would indicate dullness, but the agents report a strong and satisfactory market. Prices are low, that is, stuff will be sold at May quotations. The demand is largely retail.

Plates.—Three good orders were placed last week in local mills, running into some hundreds of tons each. Ship and boat work is improving. All mills are gathering business of moderate quantities in each order, but the character of the work coming in light shows that the fall months will have some more encouragement than the past three or four. Tank is about 1·15c; Universals, 1·20c.; flange, 1·30c.; firebox, 1·50c. Vigorous canvassing is going on for local trade.

Structural Material.—Some bridge building work that was not counted on until July is now dropping in. It is not much, but what is to come cannot but help to strengthen the market. The idea of builders is that they can do all their projected work for the rest of this year at about current prices. They can if they do not let too much time slip by. Just now our mill people are disposed to yield. Angles are 1·15c.; beams, 1·25@ 1·40c.

Steel Rails.—Small orders are coming along at not far from $29.

Old Rails.—Old steel rails will sell at about $10; old iron rails $11.50, but there is not much call.

Scrap.—This week has been dull. Buyers take less than they talk about when it comes to actual business. Iron axles are $12@$14; machinery cast, $9; choice railroad, $11@$12; No. 1 yard scrap, $10, and heavy steel scrap can be picked up at about the same figure.

Pittsburg. June 24.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business continues to move along steadily. The events during the past few weeks have given strength and confidence to the market generally. Consumers who formerly purchased limited amounts of raw iron and steel to tide them over for a short time have changed their views and have been purchasing with more freedom. Many of them have laid in a sufficient supply to last for some time, having concluded that the present is a good time to prepare for the future. It may be safely predicted that the long period of depression has departed, and that a decidedly better condition of affairs has taken its place, there being a greater disposition to regard prices as not likely to go any lower, and with a possibility of going higher in the near future. The volume of business is gradually increasing. Prospects for new business are encouraging, and while there is no reason to suppose that there will be an extraordinary demand, a gradual return to normal conditions is almost certain. In the local pig-iron market there is a slightly improved inquiry for most grades of iron and steel. Sellers generally find an easier market, however, and buyers make little objections to paying the full rate asked providing they get the article they require. In several instances, where specified qualities were quoted on and taken, the buyers have asked to have the orders duplicated. While this was done in some instances, in others sellers would take no more business at the prices formerly accepted.

Reports from the Valley are decidedly more favorable. For wire nails, the demand is increasing with sales at $1.30 @ $1.35. Sheet bars are in good demand at $17 for prompt delivery. For finished material the demand is steadily increasing for most kinds; prices, however, show no quotable change. Wrought iron and steel pipe shows an increased demand for pipe of various sizes, principally for shipment. In steel rails no sales are reported; the Carnegie Company is turning out 3,000 tons daily.

Latest.—Business was fair: the heavy transactions in Bessemer have made buyers inclined to hold off or at least purchase sparingly. Sales at Pittsburg at $9.60@$9.90. Valley sales are reported at $9.10@$9.15. There will probably be a falling off in business until after the amalgamated scale is settled. The old scale expires June 30th. The cut of Painter & Sons of 30% may cause trouble for billets. The demand was limited, but prices show no change

Tons.	COKE, SMELTED, LAKE AND NATIVE ORE.	Cash.
5,000	Bess., A. to D., P.	$9.85
5,000	B., A., S., Pitts.,	9.90
3,000	B., J., J., Pitts.	9 80
2 000	B., J., A., Pitts.	9.90
2,000	B., J., A., S., P.	9 90
2,000	B., J., A., Val.	9.90
2,000	Bess., J., A., P.,	9.80
1,500	Bess., A., Val...	9.00
1,500	Bess., S., Valley.	9.00
1,000	Mill I., p., Val.,	7.50
5 0	Mill I., June, P.	8 80
150	No. 2 Fdy. Pitts	9.50
100	No. 2 Fdy. Pitts.	9.50
50	No. 2 Foundry, all ore, Pitts.	10 35
50	No. 2 Fdy., Pitts.	9.65
50	No. 2 Silvery, P.	11.60
	CHARCOAL.	
140	Cold Bl., Ex., P.	$26.50
100	Cold Bl., Pitts...	21.50
50	Cold Bl., Pitts.,	21.50
50	No. 2 F., Pitts....	15.75
25	No. 2 F., Pitts...	15.25
	BLOOMS, BILLETS, SLABS.	
5,000	Bill, A., O., Pitts.	$14 80
4,000	Bill., A., S., O., Pitts	14.85
2,000	Bill., J., A., Pitts.	14.65
500	Bill, pr. Pitts....	14.10
500	Bill., June, Pitts.	14.25

Tons.	MUCK BAR.	Cash.
5 0	Neu., pr., Pitts.	$17.25
500	Neu., June, Pitts.	17 50
500	Neu., June, Pitts.	17.25
	STEEL WIRE RODS.	
1,000	Delivered, Pitts.	$2.0.60
	SHEET BARS.	
3,000	Del., Pitts.....	$17 00
2,000	Del., Pitts.....	17.00
	SKELP IRON.	
500	Sheared, Pitts	$1.25 4 m.
500	W. G., Pitts...	1.10 4 m.
300	N. G., Pitts....	1.10 4 m.
	SKELP STEEL.	
600	Sheared, Pitts.	$1.10 4 m.
5 0	W. G., Pitts...	0 90 4 m.
400	N. G., Pitts...	0.90 4 m.
	SCRAP MATERIAL.	
500	No. 1 Wr., net, V.	$9.00
500	C. W., gr., Chi....	9.00
300	C. W., gr., Buf....	9.00
300	No. 1 Wr., net, P.	10.25
200	C. S., gr., Pitts....	8.50
75	C. W., gr., Pitts...	9.00
	OLD IRON AND STEEL RAILS.	
800	S. R., gr, P.....	$9 85
375	S. G. R., gr. P....	10.10
3 0	S. R., gr. P.....	9.90
275	S. R., gr. P.....	10.00
250	Iron R., gross P.	12.50

METAL MARKET.

NEW YORK, Friday Evening, June 25, 1897.

Gold and Silver.

Prices of Silver per Ounce Troy.

June.	St. Ex.	London Pence.	N. Y. Cts.	Value of $1.	June.	St. Ex.	London Pence.	N. Y. Cts.	Value of $1.
19	4 87¼	27 5/16	60¼	.466	23	4.87¼	27 5/16	60⅛	.465
21	4.87¼	27 5/16	60⅛	.465	24	4.87¼	27 5/16	60⅛	.465
22	4.87¼	.....	60⅛	.465	25	4.87¼	27 5/16	60⅛	.465

Owing to the Jubilee celebration in London, combined with small offerings from this side, the silver market has been dull and stationary. The Council allotment of bills in London was a strong one this week, and altogether the market has a firm tone at present level of prices.

The United States Assay Office in New York reports the total receipts of silver at 62,000 oz. for the week.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1897, and for the years 1896 and 1895.

Month.	1897. London. Pence.	1897. New York. Cents.	1896. London. Pence.	1896. New York. Cents.	1895. London. Pence.	1895. New York. Cents.
January.	29·74	61 79	30·69	67·13	27·36	59·69
February..	29·68	64·67	31·01	67·67	27·47	59·90
March	28·96	63·06	31·34	68·40	28·33	61·98
April.....	28·36	61·85	31·10	67·92	30·39	66·61
May.....	27·86	60·42	31·08	67·88	30·61	66·75
June	.....	.....	31·46	68·69	30·47	66·64
July..	.....	.....	31·45	68·75	30·48	66·75
August....	.....	.....	30·93	67·34	30·40	66·61
September	.....	.....	30·19	65 68	30·54	66·90
October...	.....	.....	29·68	65·05	30·89	67·64
November	.....	.....	29·46	64 98	30·79	67·42
December.	.....	.....	29·70	65·24	30·40	66 47
Year.....	.....	.....	30·67	67·06	29·53	65·28

The New York prices are always per fine ounce, or ounce of pure silver; the London quotation is per standard ounce, or for metal ·925 fine.

Gold and Silver Exports and Imports

At all United States ports, May, 1897, and years from January 1st, 1897 and 1896:

	Coin and bullion. Exports.	Coin and bullion. Imports.	In ores. Exports.	In ores. Imports.	Total excess, Exp. or Imp.
GOLD					
May.	$9,466,711	$559,958	$1,260	$389,118	E. $8,518,895
1897..	17,376,839	3,064,897	93,058	1,779,674	E. 12,625,326
1896..	36,020,485	24,351,762	87,341	560,298	E. 11,195,766
SILV.					
May.	1,337,342	766,704	12,200	1,990,080	E. 1,592,758
1897..	22,808,137	3,465,097	259 150	8,556,468	E. 11,045,712
1896..	25,579,452	4,956,084	589,916	6,929,276	E. 14,984,008

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending June 25th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

	Gold. Exports.	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess, Exp. or Imp.
We'k	$2,501,470	$76,463	$749,913	$85,045	E. $3,089,875
1897..	14,117,961	1,800,307	19,745,175	1 289,883	E. 30,802,946
1896..	30,549,427	17,119,538	18,159,946	1,110,499	E. 30,479,346
1895..	32,546 347	21,926,452	16 896,205	821,921	E. 27,594,179
1894 .	65,739,013	9,673,695	18,650,815	783,681	E. 73,932,452

The gold exported for the week went to Germany, the silver to London and South America. The gold and silver imported came chiefly from Central and South America, and the West Indies.

FINANCIAL NOTES OF THE WEEK.

There is little or nothing that is new to record in the condition of business. The tariff discussion continues to drag along in Washington, and the date for the final passage of the bill, which some sanguine people had set at July 1st, now seems to be adjourned for a month or so. With Cuba, Hawaii and other disturbing issues to come in, the prospect of another month of Congress is not encouraging to business men; especially as there seems to be little chance for any action on the currency question at this session. There have been some indications of increased trade here and there, but they are limited in extent, and do not affect the general situation, which must still be described as dull and hesitating.

The situation here, and especially the evident intention to postpone currency legislation, have had their effect abroad, and there is a general disposition in the European markets to avoid American securities for the present. With the exception of a few of the higher class, and of established reputation, Americans are not at all in favor, and while there has been no general selling apparent, there has been a good deal of quiet unloading whenever opportunity offered, which has had its effect on the exchange market. It is largely due to this that we find a considerable outward movement of gold at a time when the apparent balance of trade is so largely in our favor.

The gold exports still continue, and in all $2,800,000 went out early in the week, while to-day $2,500,000 more is reported taken for shipment by Saturday's steamers; making a total of $5,300,000 for the week. A large part of this is going to Germany, very little having been shipped to England recently. The demand is variously reported to be on Austrian and Russian account; the latter seems the more probable, but it is difficult to trace, as no gold goes from here to St. Petersburg direct, its course being usually by way of Germany.

Exports of silver continue large, and the demand for the white metal seems to keep up, though shipments to the East have not been very heavy this year. The price seems to have settled down in the neighborhood of 60c. per ounce in New York. The market has had no support from speculation for some time past, and the present range of prices seems to be based on the actual demand. The production is large enough to prevent any increase in price.

Imports of specie at San Francisco by water for the five months ending May 31st were as follows:

	1896.	1897.
Gold.....	$382,786	$363.149
Silver	815,825	798,822
Totals.....	$1,198,611	$1,161,971

Of the gold this year $314,505 was in bullion and $48,644 in coin; of the silver $719,321 was bullion and $79,501 coin. Of the total this year $1,038,413 came from Mexico; $88,635 from British Columbia and $34,873 from other countries. The statement does not include the considerable amount received from Mexico by rail.

The statement of the United States Treasury, on Thursday, June 24th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	June 17.	June 24.	Changes.
Gold	$144,319,783	$143,591,587	D. $725,196
Silver.....	27,516,398	28 839,873	I. 1,323,475
Legal tenders.....	32,303,070	32,357,235	I. 54,165
Treasury notes, etc..	29,393,436	29,827,350	I. 433,914
Totals.....	$233,532,687	$234,619,045	I. $1,086,358

Treasury deposits with national banks amounted to $17,251,318, a decrease of $250,915 during the week.

Shipments of silver from London to the East for the year up to June 10th are reported by Messrs. Pixley & Abell's circular as below:

	1896.	1897.	Changes.
India.....	£1,748,298	£2,318,950	I. £570,652
China.....	492,860	67,627	D. 425,233
The Straits.....	483,032	90,305	D. 392,727
Totals.....	£2,724,190	£2,476,882	D. £247,308

Arrivals for the week this year were £174,000 in bar silver from New York, £2,000 from the River Plate, and £32,000 from the West Indies; a total of £208,000. Shipments for the week were £128,500 in bar

silver to India, and £23,115 to China, a total of £151,615.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending June 19th gives the following totals, comparisons being made with the corresponding weeks in 1896 and 1895:

	1895.	1896.	1897.
Loans and discounts	$451,906,000	$474,783,000	$518,550,800
Deposits	574,459,000	495,329,800	592,528,200
Circulation	13,194,500	14,607,800	13,992,700
Reserve:			
Specie	65,875,300	61,554,600	90,050,200
Legal tenders	114,283,700	82,196,100	106,472,800
Total reserve	$180,159,000	$143,750,700	$196,523,000
Legal requirement	143,614,750	123,832,450	148,132,050
Surplus reserve	$36,544,250	$19,918,250	$48,390,950

Changes for the week this year were increases of $4,822,100 in loans and discounts; $7,417,700 in deposits; $782,400 in specie; $1,861,500 in legal tenders, and $789,475 in surplus reserve; a decrease of $258,800 in circulation.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding dates last year:

	1896.		1897.	
Banks.	Gold.	Silver.	Gold.	Silver.
N. Y. Asso..	$61,554,600	.....	$90,050,200	.....
England.....	245,781,385	.....	183,020,045	.....
France.....	408,910,931	$251,637,763	401,229,300	$251,637,763
Germany.....	233,020,000	.....	233,850,000	.....
Austro-Hun.	136,590,000	64,226,000	176,690,000	63,285,000
Netherlands.	13,177,000	35,748,000	13,153,000	35,195,000
Belgium.....	20,183,000	.....	20,936,000	.....
Spain.....	42,028,000	56,242,000	44,393,000	52,965,000
Italy.....	60,650,000	10,345,000	58,880,000	10,795,000
Russia.....	443,065,000	.....	481,275,000	.....

The return for the Associated Banks of New York is of date June 19th; all the others are of June 24th, except the Bank of Italy, May 20th, and the Bank of Russia, May 16-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Indian exchange has been fairly steady, and the full amount of Council bills offered in London was taken up at an average of 14·56d. per rupee. The Indian money markets continue very stringent and discount rates high.

The foreign merchandise trade of Great Britain for the five months ending May 31st is given by the Board of Trade return as below:

	1896.	1897.
Imports	£181,325,730	£189,221,470
Exports	123,752,482	125,233,304
Excess, imports	£57,573,248	£63,988,166

There was an increase of 4·4% in the imports and of 1·2% in the exports. The movement of gold and silver for the five months is given in the returns as follows:

	Imports.	Exports.	Excess.
GOLD:			
1897	£13,084,856	£9,941,848	Imp. £3,143,008
1896	11,729,517	8,892,585	Imp. 2,836,932
SILVER:			
1897	6,743,877	6,189,521	Imp. 554,356
1896	6,019,087	5,934,714	Imp. 84,373

The imports this year included £39,179 gold and £4,140,635 silver from the United States.

Prices of Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$ .47½	$ .49
Peruvian sols and Chilean pesos	.42½	.45
Victoria sovereigns	4.88	4.90
Twenty francs	3.87	3.90
Twenty marks	4.78	4.80
Spanish 25 pesetas	4.78	4.85

Other Metals.

Copper.—The market was very active during the earlier part of the week, but at the close is somewhat quieter. When we last went to press the report went around that the most prominent of the Lake companies had advanced its price from 11c. to 11¼c., which was fully confirmed at the beginning of the week. Inasmuch as they had been instrumental in keeping the market for Lake steady at 11c., the conclusion drawn from the change was that they must have sold such large quantities that they raised their price with a view to stopping the influx of new orders. A large business has been transacted during the week at about the following quotations: Lake at 11¼c., electrolytic copper in cakes, wirebars or ingots at 10⅞@11c., cathodes at 10⅝@10¾c. and casting copper at 10⅜c.

The foreign market, which, on account of the Jubilee festivities in London, was closed during the first days of the week, opened on Wednesday at £49 10s. for g. m. b.'s spot, an advance of about 10s. as compared with the closing price of last week. The improvement has, however, not been fully maintained, the closing quotation to-day being £49 7s. 6d. for spot and £49 12s. 6d. for three months. Orders from abroad have not been quite so plentiful as they had been until recently, which does not seem unnatural, as foreign buyers probably prefer to see the advance here more firmly established before laying in fresh supplies. According to the latest reports consumption continues on the same large scale as heretofore. We quote refined sorts: English tough, £52 5s.@£52 10s.; best selected, £52 10s.@£52 15s.; strong sheets, £50 10s.; India sheets, £54 10s.@£55; yellow metal, 4 5/16d.

Tin continues in good demand and at improving values. Although there has now been an arrival of 1,200 tons by one vessel, most of this appears to be held by strong parties, for spot tin commands a still higher premium than at the time of our last issue. We quote spot at 14⅛c. and more distant deliveries at 13¾c.

The London market, which closed last week at £62, opened on Wednesday at £62 15s., but closed to day at £62 10s.

Exports of tin from the Straits Settlements for the four months ending April 30th were, in tons of 2,240 lbs:

	1895.	1896.	1897.
To United States	1,450	5,672	4,989
To Europe	15,135	9,002	9,006
To India	722	1,087	545
To China	458	951	308
Totals	17,765	16,712	14,848

A very considerable decrease is shown this year 1,864 tons, or 11·2%, as compared with 1896, and 2,917 tons, or 16·4%, from 1895.

Lead.—Although the business transacted has not been of as large a volume as during the few weeks previous, the offerings were so limited that the metal has scored another advance, the quotation at the close being 3·45c., with a fairly good demand and a decided reluctance to quote on the part of refiners, who wish to await the result of the tariff discussions so far as the lead ore schedule is concerned, which will undoubtedly come up for debate the beginning of next week.

The foreign market remains very strong at £11 18s. 9d.@£12 for Spanish, and £12 1s. 3d.@£12 2s. 6d. for English lead. The supplies continue to be scant, and there are no indications that they will be more plentiful.

S. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong and continues to advance. The latest sales are on a basis of 3·25@3 27½c. for Missouri lead and 3·30@3·32½c. for desilverized metal.

Spelter.—The demand has been very slack, but prices remain steady at about 4·05c. in St. Louis and 4·25c. in New York.

The foreign market is unchanged at £17 5s. for ordinaries and £17 7s. 6d. for specials.

Imports of metallic zinc or spelter into Great Britain for the five months ending May 31st were 28,723 tons. This is almost the same as in 1895, the decrease showing only 119 tons.

Antimony is a little firmer, the quotations being: Cookson's, 7½c.; Hallett's, 7c.; U. S. Star, 6⅞c., and Japanese, 6⅝c.

Nickel.—Business continues quiet, and no change in prices can be reported. We quote for ton lots 33½@36c. per lb., and for smaller orders 35½@38c. London prices are 14@16d. per lb., according to size of order. The London price is about on a parity with New York, allowing for the duty of 6c. per lb.

Platinum.—Prices are firm at $14@$15 per oz. New York. The London quotation is 55s.@56s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 54c., 55c. and 56c. per gram. Wire and foil are 52c., 53c. and 54c. per gram.

Quicksilver.—The New York quotation has been raised from $39.75 to $40 per flask. The London price stands at £7 7s. 6d. per flask, with the same price named from second hands.

Imports of quicksilver into Great Britain for the five months ending May 31st were 2,905,144 lbs., a decrease of 465,001 lbs. from last year. The exports were 811,230 lbs., a decrease of 498,380 lbs. in all.

The Minor Metals.—Quotations are given below for New York delivery:

Aluminum:		Bismuth, ℔ lb.	$1.50@$1.80,
No. 1, 98% ingots, ℔ lb	37@42½c.	Phosphorus, ℔ lb.	50@55c.
No. 2, 94%, " "	31@34c.	Tungsten, ℔ lb.	70c.
Ingots, scrap, "	30c.	Tungstic acid	45c.
Rolled sheets, "	46c. up	Ferro-tungsten, 60%	60c.
Alum.—Nickel, "	35@40c.		

Variations in price depend chiefly on the size of the order.

Average Monthly Prices of Metals

In New York, for the years 1897 and 1896; in cents per pound.

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
Jan.	11·75	9·87	13·44	13 02	3·04	3 08	3·91	3·75
Feb.	11·92	10·61	13·59	13 44	3·28	3·19	4·02	4·03
March	11·80	11·03	13 43	13·30	3 41	3·14	4·12	4 20
April	11·48	10·98	13·31	13·34	3·32	3·07	4·13	4·07
May.	11·03	11·15	13·44	13·51	3 26	3·03	4 21	3·98
June	11·10	11 67	13·77	13·59	3 33	3·03	4 21	4 10
July.	.....	11·40	.....	13·63	.....	2 96	.....	3·97
August	.....	10 98	.....	13 49	....	2·73	.....	3 76
Sept.	.....	10·66	.....	13·15	.....	2·77	.....	3·60
October	.....	10 66	.....	12·94	.....	2·80	.....	3·72
Nov.	.....	11·23	.....	13 09	.....	2·96	.....	3·99
Dec.	.....	11·28	.....	12·96	.....	3·04	.....	4·14
Year	.....	10·88	.....	13·29	....	2·98	....	3·94

Imports and Exports of Metals.

Port.	Week, June 24.		Year, 1897	
	Expts.	Impts.	Expts.	Impts
***New York.**				
Aluminum, boxes	.....	.....	1,552	.....
Antimony ore...short tons	.....	230	.....	703
" regulus...casks	.....	.....	.....	474
Brass, old.....short tons	17	.....	285	95
Copper, fine.....long tons	1,857	16	15,046	4,048
" matte.... " "	.....	.....	4,469	111
" sulphate " "	.....	.....	4,500	.....
Ferro-mangan'se " "	.....	.....	1,064	52
Iron ore..... " "	.....	.....	.....	9
Iron, pig, bar, rod " "	$478	158	5,526	1,605
" pyrites..... " "	.....	.....	.....	5,570
Lead bullion..... " "	585	1,020	18,235	31,004
Manganese ore.. " "	.....	.....	.....	3,545
Nickel ..... " "	$160	5	775	20
Rails, old ..... " "	.....	.....	2,815	.....
Spiegeleisen..... " "	.....	.....	9,123	11,362
Steel, billets, rods " "	.....	602	12,713	10,423
Tin..... " "	$118	1,350	1,119	2,479
" dross..... " "	.....	.....	.....	41,793
" and black plates, boxes	.....	24,208	.....	65,993
Zinc .....long tons	.....	.....	297	.....
" dross..... " "	$29	.....	326	.....
†Baltimore.				
Chrome ore.....long tons	10	.....	10	5,511
Copper, fine..... " "	95	.....	17,285	.....
" sulphate " "	.....	.....	1,527	.....
Ferro-manganese " "	.....	100	....	125
Ferro-silicon .... " "	.....	.....	.....	69
Iron ore..... " "	.....	6,200	.....	130,470
" pig, bar, etc. " "	.....	.....	80	1,661
Lead..... " "	.....	.....	120	300
Manganese..... " "	.....	.....	.....	4,759
Spiegeleisen..... " "	.....	75	.....	785
Steel ..... " "	.....	.....	2,710	920
" wire.....bundles	.....	251	1,567	7,764
Tin..... long tons	.....	540	641	4,317
" and black plates, boxes	.....	.....	.....	18,497
Zinc.....long tons	.....	.....	....	.....
" dross..... " "	.....	.....	46	.....
††Philadelphia.				
Antimony.....casks	.....	.....	.....	2,707
Copper ore.....long tons	.....	....	.....	15,000
Ferro-manganese " "	.....	.....	.....	48
Iron ore ..... " "	.....	.....	.....	115,302
Manganese ore.. " "	.....	.....	.....	59,255
Tin..... " "	.....	.....	.....	348
" and black plates, boxes	.....	.....	.....	.....

*New York Metal Exchange returns. †From our Special Correspondent. †† Week ending June 18. §Week, June 17.

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see page 684.)

New York. June 25.

Heavy Chemicals.—Business has been poorer again during the past week, a lack of animation being very plain because of the uncertain conditions produced by the tariff. Some speculative buying has been done right along in chlorate of potash, but sales were by no means what was expected. Bleaching power, with a threatened duty of ½c. per pound, is almost unsaleable. Prices, however remain unchanged.

We quote: Caustic soda, 60%, $2.10@$2.15; 70@76%, $1.90@$2 per 100 lbs. Alkali, 58%, 60c. for 50-ton lots and over, and 70@80c. for smaller quantities; alkali, 48%, $1@$1.20 for jobbing lots. Carbonated soda ash, 48%, 90@95c. per 100 lbs.; 58%, 75@80c. per 100 lbs. Bleaching powder, prime brands, $1.75@$1.87½; Continental, $1.55@$1.75 per 100 lbs.; Continental F brand, $1.60@$1.65. Bicarb. soda, English, 1·75@2c. per lb.; American, bulk, $1.50@$3.50 per 100 lbs., according to brand. Sal-soda. English, 60@65c. per 100 lbs.; American, 55@60c. (in barrels), and 75@80c. in kegs. Chlorate of potash, 9c. per lb.

Acids.—A little better business has been done this week, as orders are now coming in for consumption during July. Prices continue as before. Quotations per 100 lbs. in New York and vicinity in lots of 50 carboys or over are as follows: Acetic acid, commercial No. 8 (in barrels), $1.40@$1.50; in carboys, $1.50@$1 65; redistilled, 28%, in bbls., $1.70@$1.80; in carboys, $1.90@$2 05, muriatic acid, 18°, 75@85c.; 20°, 85@95c.; 22°, $1.15@$1.25, according to make and quantity. Nitric acid, 36°, $3.50@$4; 40°, $4@$4.50; 42°, $4.50@$5.50. Oxalic acid, $7 25 ex-dock and $7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 85c.@$1 in carload lots, 10@15c. higher for small quantities. Chamber acid, $6@$6.50 per ton at factory. Blue vitriol, $4@$4.25, according to grade and order.

Brimstone.—For spot sales best unmixed seconds continue to be quoted at $20 per ton. Cable advices received yesterday, however, indicate a rise of $1 per ton for shipment, making this quotation: $19.75@$20 per ton. Thirds remain 50c. less per ton

Fertilizing Chemicals.—Business during the week has shown further improvement and prices have continued on their upward tendency. The feature of special note is the sharp advance in dried blood, high grade Western being now $1.75 per unit, New York, and $1.55 per unit, f. o. b., Chicago. We quote:

Sulphate of ammonia, gas liquor, $2.12½ for shipment, and $2.20 for spot; bone, $2.05@$2.10 per 100 lbs. Dried blood, high grade Western, $1.75 per unit New York; f. o. b. Chicago, $1.55 per unit. Azotine, $1.67½ basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13%@15%, av. P_2O_5, 54@65c. per unit at sellers' works in bulk. Dissolved bone black, 17%@18% P_2O_5, 80c. per unit. Acidulated fish scrap, $9.50, and dried scrap $17.50@$18, f. o. b. fish factory. Tankage, high grade, $14 per ton; concentrated, $1.30 per unit, f. o. b. Chicago; New York, $18.50; low grade, $16.50@$17. Bone tankage, $19@$20; ground bone, $21@$23. Bonemeal, $19.50@$22.50.

Sulphate of Potash: 90%, New York and Boston, $1.99½; Philadelphia, Baltimore and Norfolk, $2.01; Southern ports, $2.03.

Double Manure-Salt: Quotations for 48@49%, less than 2½% chlorate, are 1·01@1·01½c., to arrive, and 1·02@1·03c. on spot: basis of 48%. High grade, 90@98% sulphate of potash, 1·96½@2·00½c. to arrive; basis of 90%. In bulk 24@36%, 56½@37½c. per unit O. P.

Muriate of Potash: We quote: New York and Boston, 1·75@1·78c. Philadelphia and Norfolk, 1·76@1·79½c.; Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, 1·78½@1·81c. in lots of 50 tons and upward.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12·4% actual potash, equivalent to 23% sulphate of potash, $9.25. Actual weights, ex-vessel at port of New York per ton of 2,240 lbs. (testing as before), $9.50.

Nitrate of Soda.—Conditions remain practically unchanged, with prices still at a low ebb. Quotations are 1·75@1·80c. for spot; 1·75c to arrive, and ·67½@1·70c. for shipment.

Liverpool. June 16.

(Special Report of Joseph P. Brunner & Co.)

The market for chemicals has been fairly brisk during the past week and manufacturers are busy completing American orders purchased for early shipment.

Soda ash is in moderate demand. Quotations vary considerably according to export market, and nearest range for tierces may be called about as follows: Leblanc ash, 48%, £4 10s @£4 15s. per ton; 58%, £4 15s. @£5 per ton, net cash; ammonia ash, 48%, £3 7s. 6d. @£4 per ton; 58%, £3 12s. 6d.@£4 5s., per ton, net cash. Bags are 5s. per ton under price for tierces. Special terms for American business.

Soda crystals are moving pretty freely, and are quoted at £2 17s. 6d. per ton, less 5% for barrels, and 7s. less for bags. Special terms for American orders.

Caustic soda meets with a good all-round inquiry and is firm. We quote spot range, as to market, as follows: 60%, £6 3s. 9d.@£6 5s. per ton; 70%, £7 3s. 9d.@£7 5s. per ton, net cash; 74%, £8 2s. 6d.@£8 5s. per ton; 76%, £8 15s.@£9 5s. per ton, net cash.

Bleaching powder is dull, and £6 15s.@£7 per ton, net cash, is about nominal range for hardwood packages, as to destination.

Chlorate of potash has continued in active request and a large business has been done in crystals at 4d., while orders for powder have had to be returned unfilled, makers being full up for the latter description.

Bicarb. soda is selling at £6 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is inanimate at about £7 16s. 3d.@£7 18s. 9d. per ton, less 2½% for good gray, 2½% and 2½% in double bags f. o. b. here, as to quality.

Nitrate of soda is languid and is nominally quoted at £7 17s.6d.@£8 per ton, less 2½% for double bags, f. o. b. here, as to quality and quantity.

Carb. ammonia, lump, 3d. per lb.; powdered, 3¼d. per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 680, 681 and 682 of mining stocks listed and dealt in at:

Baltimore.	Helena.	London.
Boston.	New York.	Mexico.
Butte.	Philadelphia.	Paris.
Cleveland.	Pittsburg.	Rossland.
Colo. Springs.	Salt Lake.	Shanghai.
Denver.	San Francisco.	Valparaiso.
Duluth.	Spokane.	

New York. June 25.

Mining stocks on the Consolidated Stock and Petroleum Exchange are receiving a fair amount of attention this week, and trading has been especially in the silver shares of Leadville and vicinity. At the Mining Exchange the market is made up principally on sellers' options, as there are no outside buyers wanting these securities just now, so the business done there has been of a professional nature. Brokers have reaped fractional profits wherever it was possible and but little stock changed hands.

The California stocks are low, and dealing in them has been only slight. Standard Consolidated sold at $1.45@$1.50 this week, which were the ruling quotations a week ago; sales were made of 450 shares. Brunswick Consolidated has receded 2c. to 6c. this week, with sales of 1,600 shares—about half the amount recorded on June 17th and 18th.

There has been a little more dealing in the Comstocks during the week than for some time past. Consolidated California & Virginia opened at $1.60, receded to $1.40 a day later and closed at the latter figure, with sales of 440 shares. Yellow Jacket sold at 30@35c., which is several cents better than last week. Sales were made of 500 shares. For the first time since August, 1896, Consolidated Imperial was sold on the Exchange, bringing 2c. per share; 6,000 shares were sold, the only transaction this week. Mexican dropped from 33c. last week to 27c. this week; sales were made of 400 shares at 27@30c. Potosi receded 20c. since the close last week, and sales were reported this week of 400 shares at 40@45c. The only reason given on the Consolidated Exchange for these recessions in prices is that the San Francisco market has slumped, and is "set tight" at the present quotations.

The Colorado stocks showed a little life this week, and the gains that were made have fallen to the silvers. Leadville Consolidated sold at 13c. this week, which is an advance of 8c. since a short time ago, when the stock sold at 5c. The advance is attributed to a reported strike in the mine. Of this stock there were sales of 600 shares, which compares with a total of 5,800 shares last week, and shows that holders will not dispose of their securities very readily, expecting that valuable strikes will continue to be made on the company's property. Mollie Gibson continues to fall in price, and this week it was quoted at 35@39c., with dealings in 900 shares. The recent developments in Mollie Gibson do not show up so well as was expected when the reports came which caused the stock to jump upward a few weeks ago. In the Cripple Creek stocks there is only a moderate business doing, and values in some cases have settled to a lower level. Elkton Consolidated sold at 98c. on the Mining Exchange this week, which is several cents less than the highest point reach on June 15th last. From advance figures we learn that the Elkton Consolidated Mining and Milling Company's net returns for the year ending May 30th, 1897, amounted to $531,285. The smelter ore shipped, amounting to 3,418,849 tons, showed an average value of $127 per ton, and the mill ore of $21 per ton during this period. There were driven 4,130 ft. of drifts on levels and 720 ft. from upraises. The largest monthly receipts for the year were made in January, 1897, when they aggregated $72,752; the smallest receipts were those of June, 1896, namely, $21,451. In May, 1897, the net receipts were $40,712, which is an increase of $5,929 over April, and of $7,905 over March. The company paid $190,000 in dividends during the year, which makes the total to date, $266,961. The first dividend since December, 1894, was paid in May, 1896, amounting to $10,000, or 1c. per share, and this rate was maintained until November of that year, when it was doubled. The surplus cash on June 14th, 1897, is given as $232,028, which, added to the $19,600 estimated as the amount of ore unsettled for by smelters, makes the total $251,628, and of this amount the sum of $124,317 is invested in United States bonds.

Anaconda Gold sold at 40@41c. this week, which is 4c. less than the quotation at which sales were made last week. Reports from the mine state that they have 4 ft. of $100 ore, which is a new vein, but it is apparent that brokers here are taking this news with caution, as the stock has fallen 14c. since a few weeks ago. Work opened at 5c., receded to 4½c. and closes at 5c., with transactions recorded of 6,500 shares.

The monthly report of this company shows that operations during May, 1897, consisted principally of drifting and stoping in the third level north, and that the ore chute which had been so constant for a distance of 120 ft. along this level has played out, so that there is nothing in the way of pay ore in sight. The company shipped 94½ net tons of ore in May, which had an average value of 1·65 oz of gold to the ton, netting a total of $2,260, which about paid expenses. Isabella advanced to 30c. at the close to-day, which is 3½c. more than the price at which it opened this week; sales were made of 6,600 shares.

This heavy trading is accounted for by the small dividend of 0½c., which is now being paid by the company. In March last the dividend amounted to 2½c. per share, but the operations of the company during the last few months have not been so satisfactory, and the receipts during the month of May, it is said, only just paid expenses. The company has about $104,000 in its treasury.

Annetta has sold up to 33¾c. at the close, which shows how actively the brokers have been lifting the quotations of this stock. We are informed that the company shipped 20 tons of ore last week to the Denver smelters, which netted $87 a ton. As fast as the ore is brought to the surface it is shipped.

Boston. June 24.

(From Our Special Correspondent.)

The advance in ingot copper has started quite a boom in the copper stock this week, especially in the producing mines, while those of only a speculative value have also been advanced on the bright prospects ahead. Boston & Montana touched $134, the highest price in its history, on the advance in copper which, it is claimed, will enable the company to pay at least $12 per share this year. Later the stock reacted to $132¼, but was up again o $132⅞ at noon to-day. Butte & Boston has been the leader of the speculative list in point of activity, although the stock has not sold much higher than last week. It touched $22¾ in the early dealings, declined to $20⅜, recovered to $22⅝ and sold to-day at $21¾. Over 50,000 shares changed hands.

Calumet & Hecla advanced from $380 to $395 and is very firm at this price. Quincy advanced also from $109 to $114 and held the advance. Tamarack was also strong, selling up from $118½ to $125½ and closing at $125. Osceola advanced upon the announcement of $1 per share dividend to $33½, a gain of $1¼ for the week. Franklin has held steady at $16 to $16¼ and Kearsarge advanced from $17¼ to $19, on moderate buying. Atlantic sold at $21, a gain of $¼. Tamarack, Jr. advanced from $17 to $22½, with sale at $21 to-day. The advance is said to be owing to the increasing richness of the rock. Centennial was also stronger on good reports and sold up to $7¾. Wolverine also advanced from $10 to $10¾, closing at $10½. Old Dominion advanced from $17 to $19¼, on railroad prospects. Arnold sold at $3¾@$3¼, and Tecumseh at $1¾@$2.

The gold and silver stocks were quite active and generally higher. Pioneer advanced to $4½ on good reports from the mine. Gold Coins touched $5 at one time, but later sold at $4½, and closed at $4⅞. Santa Ysabel was stronger and sold up to $14½, holding the advance. Merced, after selling at $9½, declined to $8½.

3 P. M.—At the afternoon board the market was generally a shade better. Boston & Montana sold at $133, Kearsarge at $19, Old Dominion at $18¾, Tamarack at $126, Tamarack, Jr. at $22 and Atlantic at $22; Osceola declined to $32¾. The balance of the list was fairly steady.

Cleveland. June 23.

(From Our Special Correspondent.)

The mining stock market has been quiet during the past week, only a few sales being reported by the brokers. There are few changes to note in the quotations. Republic has advanced slightly, while Lake Superior has declined $1 per share, and the holders of Pittsburg & Lake Angeline offer their property for $5 per share less this week.

Los Angeles, Cal. June 12.

(From an Occasional Correspondent.)

The Mining and Stock Exchange was opened with appropriate ceremonies on June 7th, and the large attendance on this occasion seems a promise of future success. The president of the Exchange is Mr. C. T. Pepper; the vice-president, Mr. H. M. Russell; the treasurer, Mr. E. K. Alexander, and the secretary, Mr. L. F. Parsons. The latter gentleman was at one time the secretary of the Colorado Mining Stock Exchange in Denver, and during his regime much was accomplished in the selling of mining stocks. The chairman of the committees of the Los Angeles Exchange are as follows: Executive, Mr. E. L. Allen; finance, Mr. W. E. Howard; listing mines, Mr. H. M. Russell; listing stocks, Mr. E. K. Alexander; arbitration, Mr. C. White Mortimer; membership, Mr. N. F. Wilshire; rules, Mr. W. O. Dow. The Board of Directors includes these gentlemen (with the exception of Mr. W. O. Dow) and also Mr. C. T. Pepper, Mr. F. C. Garbutt and Mr. F. D. Lanterman. There are 14 stocks now being called on the Exchange, and of these two are dividend payers, namely, Portland, of Cripple Creek, and Wedge, of the Randsburg District, in California.

The market was fairly active during the week, but at the close to-day it was quiet, owing to the fact that several prominent brokers left for the mining camps on June 11th. Prices were well maintained, however, and Rand Mountain of California shows a net gain of $3.75 per thousand for the week's trading, and Wedge 4½c. per share. The other stocks do not show a decline, and the total sales for the week were 203,100 shares. Of this amount Mollie Gibson showed dealings in 5,000 shares at 63@64c., while Anaconda Gold recorded tradings in 1,000 shares at 45@46c.

The Wedge Mining Company's books closed on June 10th on the declaration of a dividend of 2c. per share for the month. The Portland has also paid a dividend of 1c. for June.

Seven new members have been posted since yesterday and the total for the week is 23. The officers of the Exchange are doing everything within their power to establish a legitimate stock business.

Salt Lake City. June 19.

(Special Report of James A. Pollock.)

The market has been fairly active this week, notwithstanding the declining tendency in the silver-lead stocks. The gold stocks are in strong demand. Ajax remained practically unchanged. There is but little of the stock offered, but the market seems barren of absorbing quality. Anchor did nothing. Bullion-Beck continues in the dumps with limited bids and free offerings. An increased inquiry for Centennial-Eureka and the lifting of several odd blocks strengthened quotations materially. No dividend will be paid this month. Chloride Point was offered more lightly, and prices were a little stronger, although very little business was done in the stock. Very little change occurred in the Dalys, although Daly was slightly weaker on very light business. Dalton was fairly active at unchanged quotations. Operations at the mines have not yet been resumed. Dexter did little and prices made no change. Eagle has more than taken up the recent assessment. Nothing was done in East Golden Gate, and there are no buyers at any price. Four Aces sold at slightly higher fig-

ures on account of an improved showing at the mines. The regular dividend of $9,006 was declared on Geyser Marion on June 19th, and there is a prospect of a larger one in July. The company is doing extremely well and the showing at the mines has improved materially. A forced sale of a considerable block shaded prices for a few days, but the recovery came before the close. Galena was in more demand, but little change occurred in quotations. Horn Silver is doing very well, notwithstanding low metal prices. Little Pittsburg was quite active at last week's figures. Another sharp advance was made by Mercur, and closing prices ex-dividend were not far below $8. Mammoth will probably resume mill operations at once, and this prospect increased the inquiry for the stock, resulting in an advance in quotations. On comparatively light business Northern Light held at rbout last week's figures. Offerings are not at all heavy. Ontario changed but little, with business in the stock very light. Omaha was only fairly active. Both of the Swanseas were stronger, on account of their dividends. Pressure to sell caused a decline in Silver King, although the offerings are not heavy. Sacramento was somewhat lower again. Little is being done in Sunshine, with only light offerings. A nice development is reported from the Tetro, where some ore has been uncovered. Utah is sending in ore shipments again and the properties are looking well.

San Francisco. June 19.

(From Our Special Correspondent.)

The market opened fairly this week, with prices quite steady and a fair show of business. The weekly official reports from the Comstock were all interesting, even more so than usual. Matters were about the same at the opening on Tuesday and quotations were pretty well maintained, though buying orders were limited, but a break came in the afternoon under sales by one or two large operators. After the flurry passed over there was a slight recovery. It shows the state to which our market is reduced when it is stated that the "big blocks" put on the market were not more than 12,000 shares altogether.

On Wednesday a dead set was made against Chollar stock and the price was forced down considerably from the opening quotations. Nearly all the other stocks were weaker in sympathy. There was a good deal of activity and large amounts of shares changed hands,

The delinquent list of Chollar stock, by-the-way, as advertised this week, shows that the last assessment has been pretty closely paid up.

On Thursday there was a further decline in quotations, and a good deal of selling by weak holders, and the market settled down into a dull condition again. At the close it was decidedly a weak market, and there did not seem to be much prospect of improvement.

Some prices noted are: Consolidated California & Virginia, $1.50@$1.55; Confidence, $1@$1.05; Chollar, 88@95c.; Ophir, 70@72c.; Potosi, 47@50c.; Best & Belcher, 47@48c.; Gould & Curry, 43@44c.; Yellow Jacket, 30@33c.

The sworn statements filed in the company's offices show that the following companies had cash on hand June 1st: Andes, $4,851; Alpha Consolidated, $1,683; Alta, $422, with May expenses only partially paid; Belcher, $1,771; Best & Belcher, $1,110; Bullion, $826, with May expenses unpaid; Consolidated California & Virginia, $210, with $9,500 due bank on note; Caledonia, $1,704, with May expenses unpaid; Crown Point, $6,425; Challenge Consolidated, $9, with May expenses unpaid; Consolidated Imperial, $3,340, with May expenses unpaid; Confidence, $5,127, with May expenses unpaid; Consolidated New York, $274; Exchequer, $1,701; Gould & Curry, $13,494; Julia Consolidated, $736; Mexican, $7,825; Morgan, $1,442; Occidental Consolidated, $3,579; Ophir, $5,754; Overman, $8,371, with May expenses unpaid: Potosi, $9,920; Savage, $9,483; Segregated Belcher & Mides, $544; Sierra Nevada, $9,575; Standard Consolidated, $12,097 in cash and unsold bullion valued at $10,128, with $1,414 indebtedness to be paid; Syndicate, $869; Union Consolidated, $16,139; Utah Consolidated, $284.

The following companies report an indebtedness on June 1st: Chollar, $10,055; Lady Washington, $1,640; Hale & Norcross, $679, with a balance of $2,248 uncollected on assessment; Silver King of Arizona, $2,031.

London. June 16.

(From Our Special Correspondent.)

The death of Mr. Barnato is the sole topic of discussion on the Stock Exchange. There is nothing in the nature of a panic, nor is there any selling of stocks that were controlled by him. The fact is he had been out of the market for quite six months, and the business was practically in the hands of Mr. Woolf Joel. Besides, the collapse in Barnato stocks occurred with the failure of the Barnato Bank, so that the effect on the market produced by his death is very different from what it would have been if it had occurred in the height of the boom. Generally speaking there have been slight decreases in the quotations of the Barnato stocks, but the efforts of the bears have been unsuccessful on the whole.

Apart from this event, the mining market has shown an entire lack of activity. There is a holiday air prevalent in London at present and nobody is doing any business. The only stimulus to buying was the announcement of the output of the Rand for May, which amounted to 248,305 crude oz., an increase of 12,600 oz. over that of April, which itself was an easy record. Individual figures as they came to hand strengthened the market in the particular stocks. I know that in many cases the buying has been for holding and not for carrying over, but this class of buying is not very extensive at present. The recent boom has spent itself, and most people think prices will fall away again. If, however, the present rate of output continues and the concessions are granted that are half promised, there will be plenty of reasons for the market remaining firm and prices hardening. A raid has been made on the De Beers Consolidated. Rumors are circulated by people who should know that the average quality of the stones is falling off, and that the purchasing syndicate is intending to offer a lower price for the next year's contract. I am not able to obtain any reliable information of the report, so I only give it as an element of the market tactics.

West Australians have been mostly dull and hardly any business is done. Indians, on the other hand, have been well to the fore. Judging by the fact that there is no carrying over at the settlement it appears that all buying on this section of the market is for investment and that the high quotations are not engineered by speculators. The May returns show increases all around, a particularly gratifying fact in view of the recent rumored scarcity of water. Some disappointment was felt that the half-yearly dividend on Mysore was only 3s. per 10s. share instead of 4s. as was expected. More money is being kept in hand to provide for capital expenditure in exploring work, so the price of the shares did not suffer in anyway, especially as there is no speculative element in the market.

The American market is in a state of suspension owing to the Jubilee and the approach of the holiday time. It is not likely that British Columbians will make any public show just at present, though of ccurse preliminary scheming continues. A company registered some months ago, viz., in February, called the Canadian Pacific Exploration, is doing a a little quiet booming for itself, and, among other things, is announcing that on its formation the whole of its capital, £500,000, was subscribed in full. Consequently it considers itself by far the most important company in London dealing with British Columbians. Half a million pounds takes a lot of raising, and as the company has not apparently had the assistance of any large financial house, the whole tale sounds rather apocryphal. The company has been prompted by the same people who have been running a West Australian company called Hannan's Reward, and their mining man, W. H. Corbould, was the manager of the latter company. Hannan's Reward has been in existence for nearly three years, but has never paid a dividend and its shares stand at a very low figure compared with their quotation a year or two ago.

The St. John Del Rey Mining Company, operating gold mines in Minas Geraes, Brazil, has once again arrived at a dividend paying stage after many years of misfortune, though the financial condition is still very much hampered by heavy debentures.

Paris. June 13.

(From Our Special Correspondent.)

Perhaps the most notable feature of the week has been the renewed firmness of the market for the South African gold stocks. The good reports of the May production of gold had their effect in this connection, and the announcement of several dividends also helped. The news that a reduction of 30% in the wages of natives had been decided on led to the hope of a reduction in mining costs also. It is true that this will effect some saving; but after all what is really needed is a reduction in the exorbitant costs of white labor. How is this to be brought about?--one may ask. I do not know; but it is the first necessity of the situation. That is clear to all who have studied the matter.

In the copper shares I have again to report a firm market and considerable demand. The consumption of copper keeps up wonderfully, and there is no increase in stocks in spite of the extraordinary quantity you are sending us. It seems that the demand is going to remain large, and we can absorb all that is supplied. There is little or no speculation just now in the metal itself; its price has been quite steady and seems likely to remain so. Therefore the shares show little change, and that generally upward.

There has been less active demand for the metallurgical shares, but they have all been firm. In this connection, I understand that our Belgian neighbors are considering the question of supplementing their home supplies of iron by buying from your furnaces. Their own have been unable to supply all the pig iron which their steel-makers need, and the Germans have very little raw iron to spare. We have not, as yet, in France, bought iron from you, but it is quite likely we may have to do it before the year is out.

The lead and zinc shares are strong also. In fact the mining stock market is generally in a very good condition. The most marked improvement since my last letter has been in the stocks of the Russian group.

The debate in the Chamber of Deputies on the extension of the charter of the Bank of France has been varied by the proposition made by the Socialist group to abolish the special privileges of the Bank, and to establish in its place a State Bank, to be the exclusive property of the government and to be managed as a branch of the treasury. This caused a heated debate, but the amendment was voted down by a large majority. It is apparent that the bill extending the Bank charter will be passed, and the chamber has voted the question urgent, which gives it precedence of all other measures. In answer to questions the Minister of Finance declined to make public the agreement as to the use of the gold reserve of the Bank in case of war; claiming that the publication of this contract would be detrimental to the public service. The main points in the discussion on the bill were the establishment of more branches and a proposed requirement that the Bank should discount long-time agricultural notes at the same rates as commercial paper.

Much attention is attracted here by the publication of your complete table of mineral production of the United States, in the *Engineering and Mining Journal* of May 29th. Many have spoken to me of this remarkable result of private enterprise, in contrast to our own official bureaux, which take a year or two to do what you have accomplished in five months so thoroughly.

As a famous financier said to me to-day: "I take off my hat to salute such enterprise and energy.' Prompt statistics have a double value." AZOTE.

Rossland, B. C. June 16.

(From Our Special Correspondent.)

There has been no improvement in the state of affairs here since the last report was made, though there have been a few changes. The reported sale of the Homestake group to London parties has not been confirmed, but should it really come to pass that this group has been sold to English capitalists who will work the property to the fullest extent the news will be very welcome here.

Another reported change is that of the consolidation of the Monte Cristo and the Colonna, which report now seems to be confirmed. Other consolidations are talked of, and the impression among many of the leading promotors of the camp is that these re-arrangements will give a great impetus to the mining business here.

There is a noticeable lack of travel to this district this year, and it is not unlikely that it will continue until the festivities connected with the jubilee are over. It will be another month yet before there will be any improvement, and then a revival is promised. The quantity of ore produced in this camp to date is approximately 26,000 tons.

The value of the ore and matte produced in the Slocan and Trail Creek districts up to the same period will at a conservative estimate reach $3,500,000. The production therefore is steadily increasing.

MISCELLANEOUS DIVIDENDS.

Boston & Colorado Smelting Company, regular quarterly dividend of 2½%, payable July 1st, at the office in Boston, Mass.

MEETINGS.

Consolidated Night Hawk & Nightingale Gold Mining Company, annual meeting at 1525 Eighteenth street, Denver, Colo., on June 30th, at 3 p. m.

Sentinel Gold Mining Company, special meeting in Denver, Colo., on July 10th.

LATE NEWS.

OSCEOLA MINING COMPANY.—This Michigan copper mining company on June 25th declared a dividend of $1 per share, payable July 26th, to stockholders of record on June 28th. This is the second dividend this year, the company having paid $1 in February.

MONTANA ORE PURCHASING COMPANY.—The trustees on June 24th declared the regular quarterly dividend of $1 per share on the capital stock of the company—40,000 shares—payable at the New York office July 15th. The transfer books close June 28th.

[BY TELEGRAPH.]

(From Our Special Correspondent.)

SALT LAKE, UTAH, June 25.—Captain De Lamar sailed from Havre, France, June 23d. Before starting for America we are informed that he cabled instructions to Manager H. A. Cohen to order two roasters for the long-expected Golden Gate mill. Manager Cohen replied that some changes were needed and would prefer not to place the orders until Captain De Lamar's return. It appears to-day an assured fact that this mill is to be built as rapidly as possible and that the vast stores of treasure in the Golden Gate are no longer to remain undisturbed. This threatens to prove an epoch-making event. Already Joseph Dedrichs, a leading contractor, is commissioned to make out lumber specifications and the like for a 400 ton cyaniding plant, while for the past few days those close to De Lamar have been quietly but very actively purchasing Mercur realty, as well as tying up mining property thereabouts on all sides. Thus far Camp Floyd has had two stirring eras, and a third, which will far eclipse all that have gone before, seems certain to be launched this present summer.

STOCK QUOTATIONS.

NEW YORK.‡

NAME OF COMPANY.	Location.	Par val.	June 19. H.	June 19. L.	June 21. H.	June 21. L.	June 22. H.	June 22. L.	June 23. H.	June 23. L.	June 24. H.	June 24. L.	June 25. H.	June 25. L.	Sales
Alamo	Colo.	1	.03												1,900
*Alice	Mont.	25		.65		.65		.65		.60		.60		.60	
Anaconda	Colo.	1									.41	.40			6.0
Anchoria-Le	"	1													
Annetta	"	1	.32½		.33¾	.32¾	.33		.33¼	.33	.33½		.33¾		2,200
*Argentum-Jun	"	5											.33		
*Belcher	Nev.	100		.14		.14				.17		.17		.17	
Best & Belcher	"	100							.44						100
*Breece	Colo.	25		.27		.27		.27		.27		.27		.27	
Brunswick	Cal	1			.06						.06				1,600
*Challar	Nev	10										.75			
* hrysolite	Colo	50		.10		.10		.10		.12		.12		.12	
ColombianGold	R.of C	1								.75					500
* Comstock T	Nev	100	.06	.04	.06	.04	.06	.04	.06	.04	.06	.04			
Con. Cal. & Va	"	100	1.6		1 45	1 40			1.45				1.40		440
Con. Imp	"	100	.02												6,900
Creede & C. C	Colo.	1			.03						.04	.02½			1,100
Cripple Cr. Con.	"	1	.08	.05½	.06	.05½	.08	.06	.09	.05½	.09	.05½	.07½	.07	12,900
Croesus	Colo.	1													
Crown Pt	Nev	100					.15								300
Deadwood	S.Dak	25	1.00						1.10						250
Eagle	Colo.	5											.02		4,000
Elkton	"	1					.98						.99½	.99	1,400
Fanny B	"	1											.04½	.04	2,000
Favorite	"	1													
*Garfield Gro'se	"	1				.04		.04		.04		.04			
Gold Cliff	Colo.	1	.17½		.17½						.18			.25	2,0.0
*Gold Coin	"	5					5.25				5.25		5.25		
*Golden Fleece	"	1													
Gold San Juan	"	1													
*Goulo & Curry	Nev.	100		.21		.21		.21		.30		.30		.30	
Hale&Norcross	"	100											.70		2.0
*Homestake	S.Dak	100	35.00	35.00	38.00	35 00	35.00	35. 0	38 00	35.00	38 00	35 0	38.00	35.50	
*Horn Silver	Utah	25	1.70	1.55	1.70	1.55	1.70	1.55	1.70	1.52	1 70	1 55	1.70	1.55	
Iron Silver	Colo.	20									.32				1,000
Isabella	"	1	.26½	.26	.29	.28			.29	.28	.29	.28	.30		6,6.0
Jack Pot	"	1			.05¾	.05			.06	.05¾			.05		5,8.0
Japan	"	10	3 38	3 13	3 50	3 13	3 25	3.00	3.13		3.25	3.13		.08	.07½	3,0.0
Jefferson	"	1			.07½						.08			.29		10.)
King & Pemb	Ont	10													
Lacrosse	Colo.	10													6.0
Leadville Con	"	10									.13				
*Little Chief	"	50	.20	.15	.20	.15	.20	.15	.21	.15	.21	.15	.21	.15	
*Mercur	Utah	25								6.75		7.50			
Mexican	Nev.	100							.27		.30				4.0
Miami	Colo	1	.21¾	.21¾	.22½	.21¾	.23¼	.22¼	.24	.23¼	.24½	.23¾	.24¾		31,0.)
Mollie Gibson	"	5	.37	.35	.35				.39						9 0
Moulton	Mont	5													
*Mt. Rosa	Colo.	1				.07½		.07							
New Haven	"	1	.02	.01¾	.02				.02¼	.02	.02		.02	.01¾	21,40
* Old Dominion	Ariz.	25	17 50												
*Ontario	Utah	100	7.50	7.00	7.50	6.25	7.75	6.75	7 50	6.25	7.50	6.25			
Ophir	Nev	100							.70		.60				300
Pharmacist	Colo	1	.13		.10		.10		.10		.10		.10		3,900
Phœnix Con	Ariz.	100	.05								.05				8.0
Plymouth	Cal	1							.18						7 0
*Portland	"	1						.53		.65				.61	
Potosi	Nev.	100					.45		.45						4.0
*Quicksilver	Cal	100	2.00	1.00	2.00	1 00	2.00	1.00	2.00	1.00	2.00	1.00	2 00	1.00	
do. pref	"	100									8 00				100
*Red Mountain	Colo.	5				.24					.18		.14		
Russell	N. C.	1	.43	.42	.44½	.42½	.46	.45	.47	.46	.47	.46	.47	.45	47,0.0
*Savage	Nev.	100		.35		.25		.25		.29		.29		.24	
*Sierra Nev	"	100		.35		.35		.35		.45		.45		.45	
Small Hopes		1													
Specimen	Colo.	1											.02½	.02	80
Standard Con	Cal.	100	1.50						1.50				1.45		450
Templar	Colo.	1									.11		.12	.11¾	8,6.0
*Union	"	1				.15		14		.15		.13			
Union Con	Nev.	100										.30			
*Utah Con	"	100		.05		.0¾		.05							
*Victor	Colo.	5				2 50				2.50				2.50	
Work	"	1	.05				.04½			0	.04½	.04	.05¾	.05	6 50
Yellow Jacket	Nev.	100								.30		.35			500

COAL AND INDUSTRIAL STOCKS.

*American Coal	Md.	25	1.5	110	125	110	125	110	125	110	125	110			
*Col. C. & I.Dev	Colo.	100	1¾	1	1¼	¾	1¼	¾	1½	¾	1½	¾			
Col. Fuel & I	"	100	19¾	19⅝	19⅝		19⅝	19⅝	19⅞	18¼	18⅝		18	17	2,195
Col. & H. C.&I.	Ohio.	100	5	3¾	3½	3¼	4⅜	3¼	4⅜	3¼	4⅜	3¼			
*Con. Coal	Md.	100	38		38		38		38		68				
Edison E I of B.	N Y	10	109¼												100
do. E.I of N.Y	"	100			15½		116								125
General Elec	"	100	33		33¾		33⅛	33	33⅛	33⅛	33⅛		33¾	53¾	3,322
Illinois Steel	Ill.	100			37				38¾				36⅝		460
*Maryland C pr	Md.	100	60	45	60	40	60	40	60	40	60	40			
Minnesota Ir	Minn	100	49	48	49		50	49	51		52	50			6,45)
National Lead	N. J.	100	28¾	28½	28⅞	24⅝	28⅝	28½	29⅛	28⅝	29⅝	29¾	29¾	29	13,585
NewCentral C	Md.	100	7	5½	7	5¼	7⅛	5⅝	7	5½	7	5½			
New N.S.& D D.	Va.	100													
Oregon Impr	Ore.	100													
*Pennsylvania C	Pa.	100	325		325		325		325		325				
Penn Steel	"	100													
*Standard Oil		100	325⅛	325	325⅛	325	325	324	324	323	325	324			
Tenn C. I.&R.R.		100	24¾	24⅝	24¾	24¼	24½	24⅝	24⅝	24¼	24¾		24½	23⅞	13,317
Worth. Pump	N. Y.	100													
*Worth P.,pref	"	100	79	76	79	77	79	77	79	77	79	77			

‡Official quotations. New York Stock Exchange, mining 1,100 shares; other stocks, 39,994 shares; Consolidated Stock and Petroleum Exchange, mining, 6,140 shares; Mining Exchange, 155,200 shares. Total shares sold, 213,434 * Bid and ask quotations.

PHILADELPHIA, PA.†

NAME OF COMPANY.	Location.	Par Val'e	June 17. H.	June 17. L.	June 18 H.	June 18 L.	June 19. H.	June 19. L.	June 21. H.	June 21. L.	June 22. H.	June 22. L.	June 23. H.	June 23. L.	Sale
Cambria Iron	Pa.	50	34 00	32.00	35 00	34 50	34 38	34.25	35 00	34.50	35.00		36 25	35 00	693
Choc.&Gif.Ctfs	I T.	50	7 5		7 63	7.50							7.75	7.50	3.0
Conn'ls. Gas C	Pa.	5													
Hunt & Br.Top.	"	50													
" pref	"	50			47.50										11
Penn.Gas Coal	"	50													
*Pa.S'ltMfg.Co	"	50								102				102	
Penna. Steel	"	100	23.00				26 50		29.50	27.00	29.00	28.50	29.50	29.00	410
" pref.	"	100							50 00						24
UnitedGas Im	Can.		74 75		74.63		74 50		74.50	74 38	75.00	74 50	74.75		1,413
Welsb.of Can	"	5	1.53				1.68		1.75						28
Welsb Com'l	Pa.	100	18.00				21.00	19 00	20 00		25.00	21.00	25 00	21.50	30
" Com pr.	"	100									69 50	67 00	69 50		530
" Light	"	100	45 38	45 00	47 00	43¾	44¾	45.75	49 38	48.00	48 75	48.50	49 00	48 50	2,993
*West. Coal	"	50			50 0	49.00	50.00	49.00	50 0		50 00	49 00	50.00	49 00	

† Official quotations Philadelphia Stock Exchange. *Bid and asked quotations §Ex-dividend. Total sales, 7 254.

PITTSBURG, PA.* Week ending June 23.

NAME OF COMPANY.	Location.	Par val	Bid.	Ask.	Selling price	NAME OF COMPANY.	Location.	Par val	Bid.	Ask.	Selling price.
Allegheny	Pa.	$1				N.Y. & C. Gas C.	Pa.	$50			
Carborundum	"	100				Peoples' Nat. Gas.	"	50			
Chartiers Val	"	10.				Peoples' Pipeage	"	25	13½	14	
Enterprise Mg	Colo.	5				Pennsylvania Gas	"	50	6	6½	
Lustre Mg	Mex.	10	9	12		Philadelphia Gas	"	5	18	19	
Mansfield Coal	Pa.	8				Silverton Mg	Colo.	10			
Manufact. Gas	"	50				Wheeling Gas	W.V.	5)			

* Official quotations Pittsburg Stock Exchange.

BOSTON, MASS.‡

NAME OF COMPANY.	Location.	Par val.	June 18. H.	June 18. L.	June 19. H.	June 19. L.	June 21. H.	June 21. L.	June 22. H.	June 22. L.	June 23. H.	June 23. L.	June 24. H.	June 24. L.	Sales
*Ætna Con., q	Cal	5	4.00				4.00		4.00		4.00		4.00		
*Allouez, c	Mich.	25	1 00				1.00		1.00				.75		
Anaconda, c	Mont.	25													
Arnold, c	Mich.	25	3.75	3.25	3 13		3 50	3.38	3 43		3.43		3.38	3.13	900
Atlantic, c	"	25	21.00								21.0		22.00	21.75	600
Bonanza	Colo.	10													
*Bost. & C.C., g	"	1	.12	.08			12	.08	.12	03	.12	.08	.12	.08	
Bost.&Mont,gsc	Mont.	25	129¾	129	129½	126	129¼	128⅛	132	129⅛			134	132½	14,750
Butte & Bost., c	"	25	22 75	20.88	22 00	21 38	21 75	2 .75					22 25	21.75	85,928
Cal. & Hecla, c	Mich.	25			380		385		390	385	395		395		331
Catalpa, $1	Colo.	10													
Centennial, s	Mich.	25	7.75	7 38	7 75		7 50		7.50	7.25	7.50	7.00	7.63	7.50	3,296
Central, c	"	25													
Dominion Coal	N. S.	100	11 25	11.13			11.00		11 00		10 88		11.00		1,035
do. pref	"	100	88.88	88.75			84.00		84 25		84 50				2 7
Franklin, c	Mich.	25	16 00	15.75	6 00		16 00				16 25	16 00	16 00		725
Gold Coin, g	Colo.	5	5.0	4 63	4.88		4.88		5 00	4 88	4 88	4.38	4.75	4.63	4,735
*Humboldt, c	Mich.	25							.40	.30	40				
Illinois Steel	Ill.	100	38 00				37.00				37 50				10)
Kearsarge, c	Mich.	25	18 00	17 2	18 00		18 00		18 00		19.00	18 25	19.00	18.75	2,088
Lake Sup. Iron.	"	25													
Merced, g	Cal.	15	9 50	9.0			9.00						9 00	8.50	715
*Napa con , q	Cal.	7	6.50				6 50		6.50				6.50		
National, c	Mich.	25													
Old Dominion,c	Ariz	25	18 13	17 5			18.63	18 00	19 00	8.25	19 38	19.00	19.25	18 5	9,358
Osceola, c	Mich.	25	32.00	31.75					32 75	32 00			33.75	32 75	2,.58
Pioneer, g	Cal.	10			4 13	4.00	4.00	3 50	4 .3	4.00	4 63	4 13	4 63	4.25	4,765
Quincy, c	Mich.	25	110	109	110		112		113	112	114	113	1.4		487
Ridge, c	"	25													
San. Ysabel, g	Cal.	5	14 50	14 00	13.88		14.00	13.75	14 25		14 50		14.00		2,094
Tamarack, c	Mich	25	140				119½	119	1 95⅛	118½	124	13⅝	26	121	1 581
Tamarack,jr.,c	"	25	17 25	17. 0	17.25				19.00	16.75	22 00	19 50	22. 0	21.00	6,059
Tecumseh, c	"	25	2.00	1.75							2 0	1 75			950
Wolverine, c	"	25	10 25	10 00	10.50	10.25	10 38	10.25	10.50		10.75	10.50	10.75	10.50	2 390

‡ Official quotations Boston Stock Exchange. *Bid and ask quotations. Total sales, 144,925.

BALTIMORE, MD.* Week ending June 24.

NAME OF COMPANY.	Location.	Par value	Bid.	Ask.	NAME OF COMPANY.	Location.	Par value.	Bid.	Ask.
Atlantic Coal	Md.	$10			Howard C.&C	Md.	$5		
Big Vein Coal	"	1(			Newburg Orrel C.	"	25		
Consolidation Coal	"	10(	38½	40	Silver Valley	N. C.	5		
Georges Creek Coal	"	10(	106	107					

*Official quotations Baltimore Stock Exchange.

CLEVELAND, O.

NAME OF COMPANY.	Par value.	June 23. Bid.	June 23. Ask.	NAME OF COMPANY.	Par value	June 23. Bid.	June 23. Ask.
Aurora	$25		$4	Lake Superior	$5	$18	$20
Chandler	25	$35	40	Minnesota	100	43	46
Cleveland-Cliffs	100	30	35	Pittsburg & L'ke Angeline	25	60	65
Jackson	25			Republic	25	8¼	10⅝

ASPEN, COLO. June 18.

NAME OF COMPANY.	Location.	Capitalization	Par value.	Quotations. Bid.	Quotations. Ask.
Agnes C	Manitou, Colo		$1.00		$0 01
Aita Argent	Aspen	$2,000,000	1.0	$0.03¾	.0.⅛
Argentum-Juniata	"	2,6.,000	2.00	.39	40
Aspen Contact	"		5.00		.10
Aspen Deep	"		1.00	.03	.03⅜
Aspen Mining and Smelting	"	2,000,000	10.00	1.15	1.20
Bank ok Cora Bell	Leadville	60),000	1.0	.02	.03½
Best Friend	Aspen		1.00	.01½	.02
Bi-Metallic	"		1.00	.0.½	.1½
Bushwhacker	"	2,000,0.0	1.00	.04½	.05¾
Della S. Consolidated	"	1,0.0, 00	1.00	.23	.25
Gold Valley Placer	"		1.0	.07¢	.0:
Homestead	Rapid City, S. D.			.03¾	.03¾
Ingersoll	Neihart, Mont			.02½	.02⅝
Little Annie	Aspen, Colo			0.01¾	.02
Mineral Farm Consolidated	"		1.00	0 01	.02½
Mollie Gibson Consolidated	"	5,000,0.0	5.00	.31	.36
Roaring Fork	"	3,0 0,000	1.0		.02
Sheep Mt Tunnel	"	2,.00,'00	1 00	.02	02½
Smuggler	"	1,000, 00	1.00	.70	.72
Tenderfoot Consolidated	"	2,000,000			0.3¾
Union Leasing & Mg	Leadville, Colo	5.0,000	1.00	.03½	.04½

COLORADO SPRINGS, COLO.‡

NAME OF COMPANY.	Par val	June 14. H.	June 14. L.	June 15. H.	June 15. L.	June 16. H.	June 16. L.	June 17 H.	June 17 L.	June 18 H.	June 18 L.	June 19. H.	June 19. L.	Sales.
Alamo	$1									.02⅞	.02¾	.02⅝		17,300
Anaconda	5					.42½	.41½			46	45	.47		12,000
Arg'ntumJ	2			.35		.36½	36	.37½	.36½	.39¾	38½	.41	.40	15,700
*Banner	1					.009½	01	.009½						
Bob Lee	1			.005¾										1,000
Cr. & C. C.	1							(3		.02¾	.02⅝			3,000
C. C. Con.	1	.07				.07½	.07	.07½				.07½		8,000
Des Moines	1													3,000
Elkton	1	1.01	.98	1 0		.99	.98	1.00	.93½	1 03	1.00	1.02½	.98¾	16,150
Fanny R	1	11¾	.11¾	.12½	.12	.13	12½	.13¾		.15	.14	. 8	.15½	28 000
Favorite	1	.03												1,000
Findley	1	.01				.01								4,0.0
*Franklin	1					.12	.12½	.12	.12½					
Gold Fl'ce	1					.25								500
Gold & Gl	1													
Hayden G	1	.007	.006½									.06½		10,000
Isabella	1	.29½	.28¾			.29	28¼	.29½	.29	.31	.29¼	.3.¾	.30	41,100
do.stamp	1			.29¼	.29									9,.00
Jack Pot	1											(5½	.05¾	4,000
Lillie	1							.14½	.4					3,000
Magnet R	1	.009½				.01		.01						7,000
Marion	1													
*Matoe	1					.06								
Mollie G	5	.34	.31	.33	.32¼					.31	33¾	.34¼		8,700
Monarch	1													
Mt. Rosa	1											.08½		1,0.0
Oriole	1	.01		.01										22,0.0
Pharmacist	1			.09¼	.09½	09				09		.09		113,0.0
Pilgrim C	1			.01⅝		.01⅜								4,000
Portland	1	.5.½						.50	.65	.53	80	.84	.80	3,150
Specimen	1				.02¾			.04½		.04½				13,500
*Trachyte	1													
Union	1	.15	.14¾			.15⅝		.15⅝	.14¾	.15⅝		1.½		27,700
Work	1	.04½		.04½				.04½	04⅝					13, 0.0

‡Official quotations Colo. Springs Mining Stock Assoc. *Bid and asked quotations. Total shares sold, 390,100.

STOCK QUOTATIONS.

DENVER, COLO.‡

NAME OF COMPANY.	Par val	June 14. B.	June 14. A.	June 15 B.	June 15 A	June 6. B	June 6. A.	June 17 B.	June 17 A.	June 18. B.	June 18. A.	June 19 B.	June 19 A.	Sales
Acacia.	$1	.03¾	.2¼	.02½	.....	02	.02¾	.0.¾	.03	.02	03	.....	.....	1,000
*Adcie C ..	1	.004	.0.5	.....	.....	.....	.....	.03¾	.....	.003¾	.04	.003¾	.04¼	.....
*Ætna Gold	1	.003¾	.05	0.3¾	0.3¾	.....	.....	.....	.....	.....	.....	003	.03¾	.....
*Agate.....	5	.001¼	0 1¾	.00¾	0.1¾	.01¾	.....	.....	.....	.....	.....	.....	.....	.....
Alamo.....	1	.....	.....	.....	.....	.....	.....	.02¾	03	.02½	.03	.02¾	.....	1,000
*Anac'da G.	1	.40	.44	40	48	43½	.....	42	49	42	48	45	50	.....
Aola... . ..	1	.009¾	.011	.009¾	.....	.009¾	.10¾	.09	010	.0.9	01.½	.009¾	010	1,000
Arg. J... ...	1	34¼	.26	34	...	35½	.36¾	.37¼	.....	39	40	.41	.....	2,600
*Bang'ok...	1	.01¾	.03	.....	.....	.01¾	.....	.02	.03	.01¾	.03	.....	.....	.....
Bankers.....	1	.03¾	.05	.....	.....	.04	.04¾	.04	.04¾	.04¼	.....	.....	.....	1,000
BigJohnny.	1	.00 3¼	.....	.01 2¾	.....	.003¾	.....	.002¾	.003¾	.02¾	.003	.....	.....	13,'00
Big Six...	1	.07½	.15	.07½	.....	.....	.....	.07¾	.....	.07¼	.09	.07½	.19	30
Blue Jay	1	.00¾	.001	.00¾	.001	.00¾	.002½	.00¾	.002¼	.....	.....	.00¾	.01	1,000
*Bob Lee...	1	.006¼	.006¾	.005	.....	.005¾	.006¾	.003¾	.006¾	.....	.....	.....	.....	.....
*Buckhorn.	1	.....	.....	.....	.....	.....	.01¾	.....	.01¾	.....	.....	.01¾	.02¾	.....
CannonBall	1	.005	.006	.005	.....	.005	...	.004¾	.0.5¾	.005	.....	.0.5	.005½	4,000
*Chi'b'razo.	1	.002¾	.....	.003	.....	.003¼	...	.003¼	.....	.....	.....	.....	.....	.....
Colo.C.&M.	1	.0.5¢	.. ..	.02¼	.....	.....	.....	.0 9¢	.01¼	.01¾	.01¾	.....	.....	1,0'0
Colo Giant.	1	.005¾	.....	.0.6	.007	.0.6¾	.....	.00.	.'1	0101¾	.012	.003¾	.011¾	84,000
*C. C. Con..	1	.06¾	.07¼	.06	.07	.06¾	.07¾	.06¾	.07¾	.....	.....	.07¾	08	.....
C. C. Imp...	1	.0.1¾	.0.2	.001	.....	.....	.....	.001	.....	.001	.....	.'01	.....	200,'00
Dictator....	1	.00¾	.....	.001	.....	.00¾	.001	.00¾	.001¾	.....	.....	.00¾	.0.1¾	19,0.0
Eclipse	1	.001	.001¼	.001	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,000
*Elkton	1	.....	1.05	93	1.00	96	99¼	.97	1.00	.99	1.02	1 00	1 04	... .
*Garf. Gr ..	1	.....	.04¾	...	.....	.04	.04¾	.....	.....	.04	.05	.04¼	05	.....
*G ne Field	1	.001	.001¼	.0.1	.....	.001	.....	001	.....	.....	.....	.....	.....	.....
Geo. Wash	1	.....	.....	.....	.....	.....	.....	.....	.....	0.2	.....	.02	.....	2,'00
*Gold Field	1	.001	.001¾	.01	.01¾	..	.....	.0.¾	00 ¾	.0.¾	.0¾	.0.¾	.001¾	.....
*G. Fleece .	1	.....	.....	.....	.....	.....	.....	.25	.28	.24½	.2½	24	25½	.....
Gold. Hope	1	001¾	.....	.002	.....	.002	.....	002¼	.....	.0 2¼	.....	002	.003	32,000
*G. Queen	1	.00¾	.011	.....	.....	.....	.....	005¾	0.¾	.....	.....	00¾	.0.¾	.....
Gold Smith	1	.....	.....	.....	.....	.0.2¾	.03¾	.0 2¾	.....	.002¾	.03¼	.00.½	.....	5,000
GoldStand.	1	.02	.....	.02¼	.02¾	.02¾	.3	.02¾	.02¾	.02¾	.02¾	.02¾	.03	8,000
Gregory.....	1	.004	.004¾	.004¼	.0.4¾	.0.4¼	.0.5	0 4¼	.004¾	.004¼	.004¾	.0043	.0.5	54,'00
" Leasing	1	.01¾	.01¾	.01¾	.....	.....	.01¾	.01¾	.....	.....	.....	.....	.....	3,0.0
Hecla.....	1	.'01	.....	.001	.001¼	.....	.....	.....	.....	.....	.....	.....	.....	104.00
Henrietta..	1	.....	.....	.0.2¾	.....	.02¼	.02¾	.02¼	.03	0.2¾	.0.3	.02¾	.....	45,0.0
Illinois	1	.001¾	.....	0.6	.07	0.6¾	.....	.006¾	.007	.....	.....	.006	.006¾	26,000
Insley.....	1	.0 3¼	.005	.....	.....	.003	.0.3¾	.003	.004	.....	.....	.0.3	.003¾	40,000
*Internat'l	1	.00¾	.001	.00¾	.001¾	.....	.....	.....	.....	.00¾	.....	.....	.....	.....
Iron Clad...	1	.'5	.05¾	.04¾	.05¾	.04¾	.....	.13¾	05¾	.04¾	.05¾	.04¾	.05¾	1,000
Isabella.....	1	23¾	.....	.23¾	.3)	.28	31	28¾	.30¾	.28¾	.3)	.30¾	.3.¾	1,000
Jefferson..	1	.....	.....	.08¾	.....	.....	.....	.....	.....	.....	.....	.00¾	.08¾	100
*Kimberly..	1	.01¾	.02¾	.02	.02¾	.'2	.02¾	.02	.02¾	.02	.02¾	.....	.....	.....
*Ladessa....	1	.002¾	.....	.....	.....	.0.3	.....	.0'2	.....	.....	.....	.....	.....	.....
*Mollie tib.	5	31	35	30	.34	30	31¾	.32¼	37	31	37	.33¾	.36¾	.....
*Monon....	1	.....	.....	.0.¾	.....	0 1¾	0 1	.0.¼	.....	.....	.....	.....	.....	.....
*Mt. Beauty	1	.02¼	.02¾	02¼	.02¾	.12¼	.0.3¾	.02¼	.02¾	.02¼	.02¾	.02¼	.02¼	.....
Old Gold....	1	.003	.0.3½	.0.3	.....	0.3	.....	0.3	.....	.002¾	.03¼	.002¾	.0.3¼	17,000
Portland ..	1	.55	60	.52	.60	.55	.63	.60	67	.66¾	.70	.65	.80	.....
Peoples....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Puritan ..	1	.002	.003	.002	.002½	.002¼	.....	.002¼	.....	.002¼	.....	.002¼	...	38,000
Q. Victoria.	1	.001¾	.002	.001¾	...	.01¾	.....	.0 1¾	.....	.0013	.....	.0013	.002	5,000
*Royal Age.	1	.001¾	.....	.001¾	.....	.01¾	.02	.0134	.02	.001¾	.01¾	.0134	.003	.....
*Santa Fe..	1	.001	.....	.001	.001¾	.001	.01¾	.001	.001¾	.001	.001¾	.....	.....	.....
Senator.....	1	.001	.....	.001	.001¾	.00¾	.001	.0.¾	.001	.0.¾	.001	.....	.....	100,000
Sentinel....	1	.001¾	.....	.001¼	.001¾	.....	.....	.....	.....	0.2	.....	.002	.....	470,000
*Smuggler..	1	.....	.....	.....	.....	.....	.....	.72	.80	.70	.94	.....	.....	.....
*Tamarack.	1	.02¾	.03¾	.02¾	.03	.02¾	.02¾	.02¾	.02¾	.02¼	.03	.02	.03	.....
Three H's.	1	.....	.....	.002	.002¼	0.1¾	.002¾	.0.1¾	.0.2¾	.....	.....	.001¾	.002¾	36,000
Un'on Gold	1	.14¾	.....	.14¾	.15¾	.14¾	.15¾	.14¾	.15¾	.14¾	.15¾	.14¾	.15¾	.....
Vanity Fair	1	.01	.002	.....	.....	.....	.....	.....	.....	.001¼	.02¼	.001¼	.001¾	10,000
Va. M.	1	.02¾	.03	.02¾	.02¾	.02¼	.02¾	.02¾	.02¾	.02¼	.02¾	.02¾	.....	5,00
*W. C. Con.	1	.00¼	.0.¾	.00¾	.00¾	.'0¾	.00¾	.00¼	.00¾	.....	.....	.....	.....	.....
*Wh.of For.	1	.003¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*Work.....	1	.....	.....	.....	.....	.....	.....	04	.04¾	.....	.....	.....	.....	.....

‡Official quotations Colorado Mining Stock Exchange. *Bid and ask. quotations.
Total shares sold, 1,324,000.

BUTTE, MONT.

June 18.

NAME OF COMPANY.	Par value.	Bid.	Ask.	NAME OF COMPANY.	Par value.	Bid.	Ask.
Alice, g. s	$25	$0.45	$0.50	Havana G & S. M.	.....	$0.50	$0.55
Am. Dev. & M.	1	1.00	1.15	Hope (Granite Co.)	$10	1.50	2.00
Bald Butte	1	.50	1 00	Iron Mtn, s. l	10	.35	.38
Bi-Metallic, g. s	25	2.00	2.50	Merrill Gold	1	.....	
Combination	10	.20	.25	Moulton	5	.20	.25
Con. Tiger & Poorman.	1	.30	.35	Potosi	.....	.05	.06
Elizabeth...	.....	.....	.....	Royal Gold	.....	.15	.16
Exemption	.....	.....	.05	Southern Cross	.....	.....	.15
Granite Mtn., g. s	25	.90	1.00	Sunrise	.....	.....	.20

HELENA, MONT.*

Week ending June 17.

NAME OF COMPANY.	Location.	Company's office.	Par value.	Bid.	Asked	Shares sold.	Price.
Am.Dev.&M.Co.	Mont. & Idaho	Boston, Mass., & Butte, Mont.	$1	$1 00	$1.25	.....	.....
Bald Butte.....	L. & Cl'ke Co.	Helena "	1	1.50	2 50	.....	.....
Bi-Metallic.....	Granite "	St. Louis, Mo.	5	....	.....	.....	.....
Combination....	" "	" "	10	.....	.....	.....	.....
Granite Mt	" "	" "	25	.....	.....	.....	.....
Helena & Frisco	Shoshone "	Helena, Mont.	5	5.00	7.50	.....	.....
Iron Mountain.	Missoula "	" "	10	.25	27½	7,000	.25- 27½
Judge.....	Meagher "	" "	5	.05¼	.09	.....	.....
Merrill (Gold)..	Jefferson "	Butte "	1	.....	.....	.....	.....
Ontario..	DeerLodge "	Helena "	1	.....	.....	.....	.....
Yellowstone....	Meagher "	" "	5	.07½	.10	.....	.....

* Special Report of Samuel K. Davis. Total shares sold, 7,000.

SAN FRANCISCO, CAL.*

NAME OF COMPANY.	Location.	Par. value.	June 18.	June 19.	June 21.	June 22.	June 23.	June 24.
Alpha Con.	Nev.	.....	.04	.05	.04	04	.04	.03
Alta.....	"	.....	.01	.01	.....	.05	.04	.04
Andes	"	100	.14	.14	.13	.13	.13	.12
Belcher.....	"	100	.21	.18	.17	.17	.16	.16
Best & Belcher.....	"	100	48	.47	.44	.42	.40	.40
Bullion.....	"	.....	.10	.09	.09	.08	.09	.09
Caledonia	"	100	.10	.09	.09	.08	.09	.08
Challenge.....	"	.....	41	.41	.41	.41	.40	.38
Chollar.....	"	100	.89	.88	.89	.78	.75	.76
Confidence.....	"	100	1.05	1 59	95	1.00	1.00	.95
Con. California & Virginia..	"	100	1 50	1.50	1.45	1.40	1 35	1.35
Crown Point	"	100	.18	18	.17	. 7	.16	.16
Exchequer.....	"	.....	.02	.02	.01	.....	.....	.....
Gould & Curry.....	"	100	.33	.33	.32	.31	.31	.31
Hale & Norcross	"	100	.74	.75	.72	.72	.75	.70
Julia	"	.....	.04	.14	.04	.14	.04	.04
Kentuck Con.....	"	.....	.05	.04	.04	.04	.04	.14
Mexican.....	"	100	.30	.28	.31	.27	.27	.26
Occidental Con.....	"	100	15	.14	.14	.14	.13	.10
Ophir.....	"	100	.70	.69	.65	.63	.62	.62
Overman	"	.....	.10	.10	.10	.10	09	.09
Potosi.....	"	100	.50	.51	.49	.42	.39	.37
Savage	"	100	.25	.23	.24	.21	.23	.22
Sierra Nevada.....	"	100	.58	.57	.56	.53	.51	.51
Silver Hill	"	.....	01	.01	01	01	.01	.01
Standard.....	Cal.	100	1.35	1.40	1.40	1.40	1.40	1.35
Union Con..	Nev.	100	.39	.37	.37	.35	.33	.31
Utah Con.....	"	.....	.04	.04	.04	04	.14	.03
Yellow Jacket.....	"	100	.31	.31	.29	.32	31	.32

*Official telegraphic quotations, San Francisco Stock Exchange.

LOS ANGELES, CAL.*

NAME OF COMPANY.	Location.	Par val	June 6. H.	June 6. L.	June 7. H.	June 7. L.	June 8. H.	June 8. L.	June 10. H.	June 10. L.	June 11. H	June 11. L.	June 2. H.	June 2. L.	Sales
Anaconda.... ..	Colo..	$1	.46	.45	46	.45	.47	.45	...	...	....	...	...	...	1,000
Argentum-J....	"	2	....	...	...	...	...	...	...	...	...	...	...	...	.....
Brown Dake ..	Ariz..	1	...	...	...	...	...	...	...	...	...	...	44	...	.....
Brown M. & M.	Cal ..	1	.15	.10	....	....	.15	.10	....	....	.12¾	.10	.12	.11	.....
Caribo.o	B.Col.	1	.50	.49	.49	.48	49¼	.48	.49¼	.48¾	.48¾	48¼	49¼	.48¾	3,000
Iron Mtn.	Colo..	1	.02	01½	.01¾	.01¾	.2	01¾	....	....	....	....	1 8	.01¾	9,0.0
Laguna	Cal...	2½	.09¾	.09½	....	....	.09¾	.09¾	.09¾	....	....	....	.09¾	.0	6,0.0
Little Butte	"	1	...	.40	...	.39	.40	.41	.....	.....	.....	.....	.2	.10	.....
Mollie Gibson..	Colo.	2	.64	.63	.65	.64	...	...	...	...	...	...	01¾	.01	5,000
Pacific Con....	Cal ..	1	....	...	...	...	...	...	...	...	...	...	...	...	.....
Portland	Colo..	1	...	...	...	...	...	...	.57	.56	...	...	58	.57	100
Rand Mtn	Cal	1	.01	.01	.91¾	.01	01¼	01¾	01¾	.91¾	.01¾	01¾	.01¾	.01¾	133 00
Red Cloud.....	Colo.	1	.01½	.01	.91¾	.01¾	01¼	.01¾	....	....	....	....	1¾	.01¾	3,'00
Wedge	Cal...	1	.86	.85	.86	.85¾	.86¼	.85¾	.86¼	.8'	.87	.86¼	.88	.8'¾	43.000
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Official quotations, Los Angeles Mining and Stock Exchange. Total sales, 2'3,160 shares.

SALT LAKE CITY, UTAH.*

Week ending June 19.

STOCKS.†	Par value.	Bid.	Asked.	Actual selling price.	STOCKS †	Par value	Bid.	Asked	Actual selling price.
Ajax.....	$10	$0.44	$0.5)	$0.45	Horn Silver.....	$25	$1.3)	$1.75	$1 65
Alliance.....	1	.....	.25	.....	Little Pittsburg	5	.04½	.04¾	.04¼
Anchor.....	20	.6)	1 00	.80	Lucky Bill	10	.10	.15	...
Annie.....	1	.....	.10	.....	Malvern..	2½	.2)	.23	...
Bogan	1	.02¼	.05	.....	Mammoth ..	25	1.35	1.45	1 40
Brick Con.....	1	.....	.70	.....	Mercur$	25	7.8)	8 00	7.90
Bullion Beck & C.	10	5 00	5 5)	5.25	Morgan.....	125	15	.20	.....
Buckeye	1	97¾	.09½	.08¾	Northern Light	5	88	.92	90
Centen'l Eureka.	50	35.00	45.00	40.00	Ontario.....	100	6 0)	6.75	6 25
Dalton.....	5	02	.02¼	.02¾	Overland.....	5	.20	.40	.....
Dalton & Lark...	1	.06	.09	.08	Rover	10	.30	35	.....
Daly..... ...	20	3.00	3.50	.....	Silver King.....	20	12.5)	14.50	13.00
Daly West.....	20	6.75	7.2)	7.00	Sioux Con.....	10	*6	1.00	.....
Dexter.....	5	1.7)	1.8)	1 81	Sunshine.....	10	27½	35	.37
Eagle.....	10	.03¾	.04	.04	Swansea.	5	2.1)	2 25	2 20
Four Aces.....	1	.08	.10	.09	So. Swansea....	1	1.55	1 6)	1 60
Galena	10	.8)	.85	.85	Tetro.....	1	.04	.05	04
Geyser-Marion ..	5	1.27½	1.32½	1.32½	Utah...	10	.85	.90	.90
Herschel.....	5	05	.10	.....	Utah Con.....	1	.8)	.50	.....

* Special Report of James A. Pollock. †All the companies are located in Utah. §Ex-div.

ROSSLAND, BRITISH COLUMBIA.

June 16.

NAME OF COMPANY.	Par value	Selling price.	NAME OF COMPANY.	Par value	Selling price.
Alberta..	$1	$0.10	Monita.....	$1	$0.12
Big Three.....	1	.04	Monte Cristo.....	5	.22
Blue Bird	1	.05	Morning Star....	1	.15
Butte	1	.03	Nest Egg...	1	.07
Caledonia.....	1	05	North. Belle...	1	.05
California.....	1	.04	Novelty.....	1	.04
Caribou.	1	.51	O. K	1	22
Colonna.....	1	.22	Palo Alto.....	1	.05
Commander... ..	1	.15	Phoenix.....	1	05
Dardanelles	1	.20	Poorman	1	.07
Delaware	1	.07	Rambler C.....	1	.47
Deer Park..	1	.18	Reco.....	1	1.40
Dundee.....	1	.10	Red Eagle.....	1	10
Flien	1	.03	Red Mt.View	1	.08
Eric.....	1	05	Red Point...	1	.08
Freeburn	1	.05	Rossland Homestake ..	1	10
Evening Star.....	1	.10	Rossland R M.....	1	08
Giant...	1	.05	Rossland Star.	1	08
Great Western...	1	.18	St. Elmo.	1	08
Hattie B	1	.06	St. Paul..	1	.05
High Ore.....	1	.08	Silver Bell.....	1	.05
Idler	1	.05	Silverine.....	1	05
Iron Horse.	1	.12	Slocan Star.	1	2 50
Iron Mask.	1	.40	Sunset	1	.10
Ivanhoe.....	1	.....	Union.....	1	.08
I X L.....	1	.10	Virginia M.....	1	08
Josie.....	1	.42	War Eagle Con	1	1 25
Le Roi	5	7.50	White Bear	1	20
Lily May.	1	.15	Wonderful	1	.07
Mayflower.....	1	.12	Yale.....	1	.....

MEXICO.

Week ending June 16.

NAME OF COMPANY.	State.	No. of shares.	Last dividend.	Last assessment.	Prices. Opening.	Prices. Closing.
Alianza.....	Hidalgo.....	12,800	.....	.....	$5	$5
Amistad y Concordia	"	9,600	$0.70	....	22	25
Angustias.....	Guanajuato....	2,400	10.00	.....	330	350
Arevalo y Anexas....	Hidalgo	.....	10.00	.....	300	300
Asturiana y Anexas..	Zacatecas.....	2,700	10.00	.....	300	300
Barradon y Cabras .	Durango.....	2,100	.....	.....	300	300
Bartolome deMedina	Hidalgo	4,000	3.50	.....	85	90
Caberon y An	Zacatecas.....	2,400	.....	.....	30	30
Candelaria de Pinos.	"	2,500	.....	.....	80	100
Candelaria dePanuco	"	1,300	.....	.....	20	20
Candelaria deChalch	"	1,600	.....	.....	80	80
Capuzaya.....	Durango.....	2,400	.....	.....	160	120
Carmen.....	Hidalgo..	1,100	7.75	.....	400	410
Castellana y SanRam	Tepic.....	2,448	3 00	.....	100	80
Cerro Colorado..	Chihuahua.....	15,000	.....	$1.00	10	10
Cinco Señores y An..	Guanajuato....	2,000	25.00	.....	815	790
Concepcion y Anexas	S. Luis Potosi...	2,700	.....	.....	100	100
El Oro.....	Guanajuato....	500	.....	.....	40	60
Esperanza y An.....	Mexico	3,000	.....	.....	1,900	1,650
Guadalupe.....	Guanajuato ..	10,000	2.00	.....	200	180
Huautla.....	Santa Ana.....	4,000	.....	.....	70	70
Luz de Borda	Michoacan... ..	4,000	.....	.....	40	50
Luz de Maravillas....	Hidalgo.....	1,100	.....	.....	160	200
Pabellon.....	"	1,000	2.89	.....	180	200
Palma.....	Zacatecas.... ..	2,400	.....	.....	250	200
Purisima de los Com.	"	2,400	.....	.....	10	5
Real del Monte.....	Hidalgo..	2,554	10.00	.....	900	950
Refugio y Va.....	"	.....	.....	.....	6	6
Restauradora..... ..	Durango ...	10,000	.....	.....	60	60
Rosario y Anexas....	"	4,800	.....	.....	50	60
San Francisco...	Hidalgo..... ..	3,000	3.00	.....	310	300
S. Ped. Chalchihuites	"	1,000	2.00	.....	80	100
San Rafael y Anexas	"	1,200	20.00	....	900	850
do. free stock.	"	1,200	14.00	....	450	400
San Rafael del Oro..	Hidalgo	3,000	.....	.....	30	30
Sta. Maria de la Paz..	S Luis Potosi..	2,400	.....	.....	550	570
Sirena.....	Durango.....	2,400	....	..... .	80	100
Soledad	Hidalgo..... ..	960	7.50	....	440	400
Sorpresa.....	"	960	5.00	.....	300	250
Trinidad.....	Guanajuato...	2,000	.....	.....	60	50
Tlaxinga.....	Puebla.....	2,400	.....	.....	30	40
Union.....	Hidalgo..... ..	2,000	8.00	.....	350	300
Zaragoza.....	"	1,100	.....	.....	15	15
Zomelahuacan (gold)	Vera Cruz	5,000	.....	.....	100	100
Zona Min. de Pozos..	Guanajuato....	2,400	... .	1.50	20	10

NOTE.– In most of the older Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Many newer companies have a nominal par value, usually $5) or $100. Prices are in Mexican dollars.

STOCK QUOTATIONS.

LONDON. June 11

NAME OF COMPANY.	Country.	Authorized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d	s. d.		£ s. d.	£ s. d.
Alaska-Mexican, g	Alaska	£200,000	1 0 0	0 4.8	Apr., '897	1 5 0	1 10 0
Alaska-Treadwell, g	"	1,500,000	5 0 0	1 6	" "	4 0 0	4 5 0
Anaconda, c., s	Montana	6,000,000	5 0 0	5 1¾	May "	6 0. 0	6 2 6
Cariboo Goldf., pref., g	British Col.	100,000	1 0 0	.....	.....	15 0	1 0 0
Chiapas, g., s., c	Mexico	252,500	1 0 0	.....	.....	5 0	7 0
De Lamar, g. s	Idaho	600,000	1 0 0	5 0	Nov., 1896	4 0	5 0
Doric, g	Colorado	135,000	5 0	..	.....	3 3	3 6
Elkhorn Priority (New), s	"	80,000	1 0 0	.....	.....	12 6	17 6
Golden Feather, g	California	200,000	1 0 0	.....	.....	6 3	8 9
Golden Gate, g	"	80,000	1 0 0	.....	.....	2 6	3 6
Golden Leaf, g	Montana	300,000	1 0 0	.....	.....	0 6	1 0
Grand Central, g., s	Mexico	250,000	1 0 0	2 0	Dec., 1896	11 3	13 9
Hall Mines, c., s	British Col.	250,00	1 0 0	.....	.....	1 5 0	1 7 6
Lillooet, F. R. & Car., g	"	300,000	1 0 0	.....	.....	1 10 0	1 15 0
Montana, g., s	Montana	800,000	1 0 0	0 6	June, 1896	4 4	5 0
Palmarejo, g., s	Mexico	800,000	1 0 0	.....	.....	1 3	1 9
Plumas-Eureka, g	California	281,25.	2 0 0	0 6	Oct., 1896	2 6	5 0
Richmond, g., s., l	Nevada	270,000	5 0 0	1 0	Dec., "	7 6	10 0
Sierra Buttes, g	California	245,000	4 0 0	0 6	Apr., "	1 5	3 9
Central Chile Copper	Chile	225,000	1 0 0	.....	.....	1 5	7 6
Colomb. Hydrauic, g	Colombia	75,000	1 0 0	1 0	July, 1895	1 5	7 6
‡Copiapo, c	Chile	200,000	2 0 0	1 6	June, 1897	2 0 0	2 5 0
Frontino & Bolivia, g	Colombia	140,000	1 0 0	2 0	Mar., "	1 11 3	1 13 9
Santa Anna, g	Brazil	150,000	1 0 0	.....	.....	3 6	4 6
St. John del Rey, g	"	562,000	1 0 0	xn	Jan., 1895	17 6	1 0 0
Tolima A., s., g	Colombia	70,000	5 0 0	5 0	Mar., 1896	4 15 0	5 5 0
Tolima B., s., g	"	3,000	5 0 0	5 0	" "	3 5 0	4 5 0
Libiola, c	Italy	252,500	5 0 0	4 0	May, 1897	2 2 6	2 7 6
Mason & Barry, c., sul	Portugal	1,450,000	4 0 0	£1 cp	Dec., 1896	2 17 6	3 0 0
Rio Tinto, c	Spain	3,250,000	0 0 0	£1	May, 1897	27 5 0	27 7 6
Tharsis, c	"	625,000	2 0 0	7 6	April, "	5 15 0	6 0 0
Bayley's United, g	W. Australia	600,000	5 0	0 4	Dec., 1894	3 0	3 6
†Broken Hill Prop., s	N.S. Wales	384,000	8 0	0 6	Apr., 1897	2 10 0	2 12 6
Con. Gold Mines, g	W. Australia	375,000	1 0 0	.....	.....	3 9	6 3
Great Boulder, g	"	175,000	1 0 0	4 0	May, 1897	7 14 6	7 15 0
Harquahala, g., s	"	300,000	1 0 0	1 6	Nov., 1894	1 6	2 6
Hauraki, g. s	New Zealand	4,000	2 6	0 6	Apr., 1897	9 6	10 6
Kapanga, g	"	250,000	1 0	0 b.&rt	May, 1896	7 6	8 0
Lake View Consols, g	W. Australia	250,000	1 0 0	.....	.....	7 7 6	7 10 0
Menzies Gold Reef, g	"	175,000	1 0 0	2 0	June, 1896	8 9	11 3
†Mt. Lyell Min & R., l., c	Tasmania	900,000	3 0 0	rts.	" "	9 10 0	9 15 0
‡Mt. Morgan, g	Queensland	1,000,000	1 0 0	0 6	" 1897	3 7 6	3 12 6
‡Waihi, g	New Zealand	160,000	1 0 0	2 0	" "	6 15 0	7 0 0
Waitekauri, g	"	136,000	1 0 0	1 0	Feb., "	2 10 0	2 15 0
Wentworth, g., s	N. S. Wales	500,000	1 0 0	1 0	Apr., 1896	8 9	11 3
White Feath. Rew., g	W. Australia	80,000	1 0 0	.....	.....	1 2 6	1 5 0
Champion Reef, g	Colar Fields	300,000	10 0	3 0	Apr, 1897	4 11 3	4 3 9
Coromandel, g	"	120,000	1 0 0	1 0	Feb., "	3 12 6	3 17 6
Mysore Gold, g	"	250,000	10 0	3 6	Mar., "	4 15 6	5 1 0
Nundydroog, g	"	220,000	1 0 0	2 0	" "	4 8 9	4 11 3
Ooregum, g	"	145,000	1 0 0	2 0	Apr, "	3 0 0	3 2 6
Ooregum, pref., g	"	120,000	1 0 0	2 0	" "	3 12 6	3 17 6
British S. Af., chartered	So. Africa	2,500,000	1 0 0	xn	Jan., "	2 11 3	2 3 9
‡Cape Copper, c	"	600,000	2 0 0	2 6	June, 1896	2 6 3	2 8 9
†City & Suburban g	Transvaal	1 360,000	4 0 0	2 0	Jan., 1897	4 6 3	4 8 9
Con. Deep Level, g	"	200,000	1 0 0	6 0	Oct., 1896	3 5 0	3 15 0
Crown Reef, g	"	120,000	1 0 0	16 0	May, 1897	11 15 0	12 0 0
De Beers Con., d	"	3,950,000	5 0 0	£1	Jan "	29 1 3	29 3 9
Durban Roodepoort, g	"	135,000	1 0 0	2 0	May, "	6 7 6	6 12 6
Ferreira, g	"	90,000	1 0 0	3 0	Jan., "	19 5 0	19 15 0
Geldenhuis Est., g	"	200,000	1 0 0	3 0	Apr, "	3 3 9	3 16 3
‡Geldenhuis Main Reef, g	"	150,000	1 0 0	2 0	Feb, 1896	1 0	1 1 3
Goldfields Deep, g	"	600,000	1 0 0	.....	.....	7 11 3	7 13 9
Henry Nourse, g	"	125,000	1 0 0	6 0	Jan., 1897	7 12 6	7 17 6
Heriot (New), g	"	115,000	1 0 0	5 0	May, "	7 12 6	7 17 6
Jagersfontein, d	Orange Fr. St.	1,000,000	5 0 0	6 0	Apr., "	8 12 6	8 17 6
Langlaagte Estate, g	Transvaal	500,000	1 0 0	3 0	Jan, "	4 2 6	4 7 6
Matabele G. Reefs, g	So. Africa	160,000	1 0 0	.....	.....	2 17 6	3 2 6
Namaqua, c	Cape Colony	200,000	2 0 0	1 6	Dec., 1895	2 0 0	2 5 0
Primrose (New), g	Transvaal	300,000	1 0 0	4 0	May, 1897	4 2 6	4 5 0
‡Rand Mines, g	So. Africa	400,000	1 0 0	.....	.....	24 5 0	24 10 0
Rhodesia, Exp., lands, etc	"	50,000	1 0 0	.....	.....	4 10 0	5 0 0
Robinson, g	Transvaal	2,750,000	5 0 0	5 0	Jan. 1897	7 15 0	8 0 0
Sheba, g	"	1,400,000	1 0 0	1 0	Mar., "	2 2 6	2 5 0
Sim. & Jack (New), g	"	5,000,000	5 0 0	.....	.....	3 10 0	3 15 0
Wemmer, g	"	80,000	1 0 0	15 0	Jan. 1897	7 0 0	7 5 0

‡Ex-dividend. †Dividend pending. §Rights pending.

PARIS. Week ending June 11.

NAME OF COMPANY.	Country.	Product.	Capital Stock.	Par value.	Divs. last year.	Prices. Op'ning.	Prices. Closing
			Francs.	Fr.	Fr	Fr.	Fr.
Aciéries de Creusot	France	Steel mfrs.	27,000,000	2,000	80.00	2,070.00	2,070.00
" " Firminy	"	" "	4,000,000	500	85.00	1,810.0	1,825.00
" " Fives-Lille	"	" "	12,000,000	500	85.00	787 50	790.00
" " la Marine	"	" "	20,000,000	500	87.50	1,100.00	1,105.00
" " Longwy	"	" "	.....	500	85.00	875.00	875.00
Aguas Tenidas	Spain	Iron pyrites	10,000,000	500	25.00	100.00	86.00
Aniin	France	Coal	.....	.....	.....	170.00	5,125.00
Blache-St Vaast	"	Steel	.....	1,000	160.00	3,640 00	3,650 00
Bully Grenay	"	Coal	.....	500	80.00	2,37 .00	2,36 .00
Bor.eo	Lower Cal	Copper	.....	500	93.50	1,990.00	1,990.00
Briansk	Russia	Coal & Iron	.....	.....	.....	1,38 .00	1,355.00
Bruay	France	Coal	3,000,000	400	700.00	26,115.00	26,200.00
Callao	Venezuela	Gold	32,200,000	125	.....	3.5	3 25
Cape Copper	S. Africa	Copper	.....	50	1.50	65 0.	65.50
Champ d'Or	"	Gold	.....	25	.....	25 00	28 00
Courrieres	France	Coal	60,000	500	160.00	1,62 .5	1,630.00
De Beers Consolidated	S. Africa	Diamonds	98,750,000	125	15.62	713.0.	741.50
Denain-Anzin	France	Steel	.....	500	21.0	5'5 0.0	551.00
Dombrowa	Russia	Coal	.....	500	.....	590.00	590.00
Donetz	"	Steel	.....	.....	.....	935.00	975.00
Dourges	France	Coal	.....	1,000	200.00	11,200.00	11,225.00
Dynamite Centrale	"	Explosives	.....	400	12.50	465.00	450.00
Esperance	"	Coal	.....	2,500	.....	600.00	605.00
Fraser River	Brit. Col'mb	Gold	.....	.....	.....	41.25	40.50
Huanchaca	Bolivia	Silver	.....	125	5.00	62.00	61.00
Huta-Bankowa	Russia	Iron & steel	.....	.....	.....	3,885.0.	3,880.00
Langlaagte Estate	S. Africa	Gold	11,750,000	25	11.25	163.00	140.00
Lagunas	Chile	Nitrates	.....	125	12.50	72.00	70.00
Laurium	Greece	Zinc & lead	16,300,000	500	40.00	654.00	670.00
Lautaro	Chile	Nitrates	.....	125	.....	145.00	130.00
Malfidano	Italy	Zinc	12,500,000	500	40.00	1,040.00	1,015.00
Metaux, Cie. Fran. de	France	Metal d'iers.	25,000,000	500	12.00	675.00	672.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	40.00	73 .00	730.00
Naphthe Baku	Russia	Petroleum	.....	.....	.....	514.00	518.00
Naphthe, Le	"	"	.....	.....	.....	2,700.00	2,700.00
Naphthe Nobel	"	"	.....	.....	.....	418. 0	419 00
" parts	"	"	.....	.....	.....	8,150.00	8,400.00
Nickel	N. Caledonia	Nickel	2,720,000	500	80.00	210.00	216.00
Paccha-Jazpampa	Chile	Nitrates	.....	.....	.....	15.00	15 00
Penarroya	Spain	Coal, etc	.....	500	65.00	1,89 .00	1,9 0.00
Rebecca	Colorado, U.S.	Gold	.....	.....	.....	4.00	3.00
Rio Tinto	Spain	Copper	41,250,000	250	27.65	(87.50	689.00
Rive-de-Gier	France	Coal	.....	.....	.....	17.00	17.00
Robinson	S. Africa	Gold	.....	125	12.5.	196.00	200.00
St Etienne	France	Coal	.....	.....	15 00	396.00	394.00
Saint Elie	Fr. Guiana	"	4,000,000	25	.....	25.00	24.50
Salines de l'Est	France	Salt	.....	500	20.00	255.00	267.50
Salines du Midi	France	" etc	.....	.....	.....	4.00	3.00
Salt Gem de la Rus. Mer	Russia	" etc	.....	.....	.....	614.00	617.00
Tharsis	Spain	Copper	.....	50	8.75	152.00	152 50
Vicoigne-Nœux	France	Coal	1,000	700 00	.....	19,150.00	19,650.00
Vieille Montagne	Belgium	Zinc	9,000,000	80	20.00	529 00	532.00

VALPARAISO, CHILE.* May 8.

NAME OF COMPANY.	Location.	Capital paid.	Sh. Val. paid up.	Last Dividend.	Prices. Bid.	Prices. Asked.	Prices. Last sale
Arturo Prat, silver	Chile	$3,000,000	$100	1 per cent	$18	$21	$21
Caracoles, silver	"	315,000	100	5 "	.....	.....	.....
Huantajaya (mine) silver	"	1,000,000	100	13 "	.....	.....	.....
Huanchaca, silver	Bolivia	8,000,000	25	4 "	26½	27	28
Oruro, silver	Chile	800,000	200	.....	285	300	300
S. Agus. de Huanta, silver	"	1,500,000	100	2½ per cent.	.....	.....	.....
T dos Santos, silver	"	2,000,000	100	1 "	8	10	10
a ua Santa, nitrate	"	3,000,000	50	7 "	13	31	31
Antofagasta, nitrate	"	2,000,000	200	.....	141	143	141
Huantajaya (mill) nitrate	"	600, 00	100	5 "	.....	.....	.....
Maderas, coal	"	460,000	92	.....	.....	.....	.....
Union, nitrate	"	2,1 0,000	200	.....	40	42	42

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA.* May 21.

NAME OF COMPANY.	Country.	No. of shares.	Value. Par.	Value. Paid up.	Last dividend. Date.	Last dividend. Amount.	Price.
Jelebu Mg. & Trad	China	45,000	$5	$5	Oct., 1894	$0.25	Taels 1 61
Punjom Mg., Ltd.	"	59,340	4	4	Jan., 1897	.20	" 5.84
do. pref	"	3', 10	1	1	" "	.50½	" 1.35
Raub Australian G. Mg	"	200,000	£1	13s. 10d.	June, 1896	.12	" 17.52
Sheridan Con. M. & M.	Colorado, U.S	2 ,000	Taels 100	Taels 100	.....	.....	" 2.00

* Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

DIVIDENDS.

NAME OF COMPANY.	Current Dividends. Date.	Current Dividends. Am't.	Paid since Jan. 1, 1897.	Total to date.
Aetna Con. Q	J'ne 10	$10,000	$60,000	$100,000
Alaska-Mexican	.....	.....	36,000	209,031
Alaska-Treadwell	.....	.....	150,000	3,175,000
Alice	.....	.....	20,000	1,015,000
*Anaconda	.....	.....	1,500,000	3,750 000
*Anchoria-Leland	J'ne 15	6,000	36,000	66,000
Arizona Copper	.....	.....	48,000	.....
Atlantic Copper	.....	.....	40,000	740,000
*Bald Butte	.....	.....	2,500	482,500
Big Six	.....	.....	12,500	5,000
*Boston & Montana	.....	.....	900,000	5,825,000
Bullion Beck	.....	.....	176,000	2,117,000
Calumet & Hecla	July 7	1,000,000	3,000,000	49 850,000
*Cariboo	.....	.....	32,000	156,965
Centennial Eureka	.....	.....	90,000	2,010,000
Champion	J'ne 15	8,500	17,000	78,700
Charleston	.....	.....	10,000	150,000
Coronas	.....	.....	4,500	9,500
Daly	.....	.....	37,500	2,925,000
Della S	.....	.....	10,000	60,000
*Elkton Con	J'ne 21	20,000	125,000	286,960
*Florence	.....	.....	18,630	132,530
Galena	.....	.....	5,000	71,000
Garfield-Grouse	.....	.....	12,000	24,000
*Geyser-Marion	J'ne	9,000	27,000	27,000
*Gold Coin	.....	.....	35,000	140,000
Golden Fleece	.....	.....	6,000	569,179
*Gwin	.....	.....	6,000	6,000
Hecla Con	.....	.....	30,000	2,175,000
Highland	.....	.....	20,000	3,244,918
*Homestake	J'ne 25	31,250	187,500	6,275,000
*Hope	.....	.....	40,000	69?,252
Idaho	.....	.....	80,000	152,000
Iowa Gold	.....	.....	5,000	65,000
Isabella	J'ne 25	11,250	67,500	270,000
Last Chance	.....	.....	20,000	40,000
Le Roi	.....	.....	125,000	400,000
*Mercur	June	25,000	150,000	725,000
Merrimac	.....	.....	9,400	9,400
Mont. Ore Pur. Co	J'ly 15	40,000	120,000	600,000
*Morning Star	.....	.....	60,000	510,000
Napa Con	.....	.....	20,000	830,000
New Idria Quicksilver	June 1	10,000	10,000	10,000
*N. Y. & Honduras Rosario	" 22	15,000	90,000	772,500
Ontario	" 30	15,000	90,000	13,445,000
Osceola	J'ly 26	50,000	100,000	2,172,500
*Pennsylvania	J'ne 20	2,576	10,300	15,500
*Portland	" 15	30,000	180,000	1,043,000
Princess	.....	.....	5,000	45,000
Quincy	.....	.....	100,000	9,070,000
Rambler-Cariboo	.....	.....	40,000	40,000
*Reco	.....	.....	150,000	187,500
Sacramento	.....	.....	15,000	22,000
*Silver King	J'ne 10	37,500	225,000	1,087,500
Slocan Star	.....	.....	50,000	350,000
South Swansea	June	7,500	37,500	44,960
Standard Con	.....	.....	20,000	3,737,868
*Swansea	J'ne 10	5,000	25,000	46,500
Tamarack	" 30	180,000	180,000	4,950,000
Utah	.....	.....	2,000	175,000
Victor	.....	.....	60,000	765,000
Western Mine Enterprise	.....	.....	6,000	12,000
Totals	.....	.....	$1,513,551	$7,740,230 $127,961,763

NOTE.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. Readers of the *Engineering and Mining Journal* will confer a favor on the publishers if they will notify the *Journal* of any errors or omissions in the above table. * May dividend paid.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No.	Dlnq.	Sale.	Am.
Alta	Nev	56	June 25	July 16	.05
Anchor	Cal	....	July 7	.....	.80
Bullion	Nev.	50	June 8	June 28	.10
California	Utah	...	July 5	Aug. 7	.01
Challenge Con	Nev.	23	June 16	July 8	.10
Channel Bend	Cal	8	" 5	June 26	.03
Chollar	Nev	43	" 15	July 8	.15
Christmas	Utah	....	July 23	Aug. 17	.016
Columbia	Cal	....	" 6	.....	.25
*Constellation	Utah	....	June 4	July 5	.01½
*Emerald	"	....	July 15	Aug. 7	.00½
Golita	Cal	5	" 12	" 9	.10
Hale & Norcross	Nev	111	June 24	July 15	.10
Live Yankee	Cal	....	" 18	.....	.03
Lucky Bill	Utah	....	" 12	July 1	.01¼
Montecito	Cal	4	July 12	Aug. 9	.10
National Con	"	....	" 17	.....	.10
Occidental Con	Nev	27	June 12	July 1	.10
Pine Hill	Cal	10	July 1	" 22	.05
Rescue	Utah	...	" 3	July 19	.10
Rock Island	Nev.	14	June 25	" 6	.02
Shasta Iron	Cal	4	July 20	Aug. 10	.00½
Silver King	Ariz.	17	June 2	June 23	.25
Snowflake	Utah	....	June 7	.....	.01
Star G. & S.	"	....	July 5	July 21	.02
Sterling	Cal	4	" 12	Aug. 9	.10
Sunbeam Con	Utah	11	June 26	July 13	.00½
Tetro	"	5	" 17	" 10	.01
Thorpe	Cal	....	July 17	.....	.02½
Troy	Alaska	4	" 6	July 22	.10
Undine	Utah	...	June 19	" 17	.03¾
West Cable	"	....	" 12	" 14	.00½

* New assessment.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Val	Assessments. Total Levied.	Assessments. Date and Amount of Last.			Dividends. Total Paid.	Dividends. Date and Amount of Last.		
1	Adams, s. l. c.	Colo..	$1,500,000	150,000	$10	*	.....	.....	.....	$693,500	Oct..	1895	.04
2	Ætna Cons., q.	Cal ..	500,000	100,000	5	*	.....	.....	.....	100,000	June.	1897	.10
3	Alaska-Mexican, g.	Alask	1,000,000	200,000	5	.....	.....	.....	.....	209,031	April.	1897	.10
4	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	*	.....	.....	.....	3,175,000	April.	1897	.37½
5	Alice, g. s.	Mont.	10,000,000	400,000	25	*	.....	.....	.....	1,015,000	April.	1897	.05
6	Anaconda Copper.	Mont.	30,000,000	1,200,000	25	.....	.....	.....	.....	3,750,000	May..	1897	1.25
7	Anchoria-Leland, g.	Colo..	600,000	600,000	1	*	.....	.....	.....	60,000	May..	1897	.01
8	Argentum Juniata, g.s.l	Colo..	2,600,000	1,300,000	2	*	.....	.....	.....	39,000	July..	1895	.03
9	Aspen Mg. & S., s. l.	Colo..	2,000,000	200,000	10	*	.....	.....	.....	900,000	July..	1894	.10
10	Atlantic, c.	Mich.	1,000,000	40,000	25	.....	.....	.....	.....	740,000	Feb..	1897	1.00
11	Aurora, i.	Mich.	2,500,000	100,000	25	*	.....	.....	.....	700,000	April.	1896	.50
12	Bald Butte.	Mont.	250,000	250,000	1	*	.....	.....	.....	482,500	May..	1897	.03
13	Bangkok-Cora Bell, s. l.	Colo..	600,000	600,000	1	.....	.....	.....	.....	107,510	July..	1896	.01
14	Belden, F. E., m.	N. H.	500,000	100,000	5	*	.....	.....	.....	217,000	Jan ..	1896	.04
15	Big Six, g. s.	Colo..	500,000	500,000	1	.....	.....	.....	.....	5,000	April.	1897	.00½
16	Bi-Metallic, g. s.	Mont.	5,000,000	200,000	25	*	.....	.....	.....	1,630,000	June.	1893	.10
17	Boston & M. Cons., g.s.c	Mont.	3,750,000	150,000	25	*	.....	.....	.....	5,825,000	May..	1897	3.00
18	Brotherton, l.	Mich.	2,000,000	80,000	25	*	.....	.....	.....	120,000	Mar..	1893	.50
19	Bullion, Beck & Champ.	Utah.	1,000,000	100,000	10	*	.....	.....	.....	2,117,000	Mar..	1897	.50
20	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	.....	.....	.....	.....	48,850,000	April.	1897	5.00
21	Cariboo.	B. C..	800,000	800,000	1	.....	.....	.....	.....	156,965	May..	1897	.02
22	Centen'l-Eureka, g.s.l.c	Utah.	1,500,000	30,000	50	30,000	Mar..	1889	1.00	2,010,000	Mar..	1897	1.00
23	Central, c.	Mich.	500,000	20,000	25	100,000	Oct..	1861	.65	1,970,000	Feb..	1891	1.00
24	Champion, g. s.	Cal..	340,000	34,000	10	.....	.....	.....	.....	78,200	April.	1897	.25
25	Charleston, p. r.	S. C..	1,000,000	10,000	100	*	.....	.....	.....	150,000	Feb..	1897	1.00
26	C. O. D., g.	Colo..	500,000	500,000	1	*	.....	.....	.....	25,000	Mar..	1896	.01
27	Cœur d'Alene, s. l.	Idaho	5,000,000	500,000	10	.....	.....	.....	.....	340,000	June.	1893	.06
28	‡Cons. Cal. & Va., g. s.	Nev..	21,600,000	216,000	100	5,014,130	April.	1897	.25	3,898,800	Feb..	1895	.25
29	Coptis, g. s.	Nev..	10,000,000	100,000	100	.....	.....	.....	.....	77,000	Feb..	1895	.01
30	Dalton & Lark, s. l.	Utah.	2,500,000	2,500,000	1	.....	.....	.....	.....	87,500	Aug..	1896	.00½
31	Daly, s. l.	Utah.	3,000,000	150,000	20	.....	.....	.....	.....	2,925,000	Mar..	1897	.25
32	†Deadwood-Terra, g.	S. D..	5,000,000	200,000	25	*	.....	.....	.....	1,240,000	Aug..	1896	.50
33	De Lamar, g. s.	Idaho	2,000,000	400,000	5	*	.....	.....	.....	2,250,000	Oct..	1896	.25
34	Della S.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	60,000	Jan ..	1897	.10
35	Doe Run, l.	Mo...	1500,000	5,000	100	.....	.....	.....	.....	.....	April.	1897	.50
36	Elkhorn, s.	Mont.	1,000,000	200,000	5	.....	.....	.....	.....	1,212,000	June.	1895	.06
37	Elkton Cons., g.	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....	266,960	May .	1897	.02
38	Enterprise, g. s.	Colo..	2,500,000	500,000	5	*	.....	.....	.....	825,000	May .	1893	.25
39	Florence, s.	Mont.	2,500,000	500,000	5	*	.....	.....	.....	132,530	May .	1897	.01
40	Franklin, c.	Mich.	1,000,000	40,000	25	.....	.....	.....	.....	1,240,000	Jan .	1894	2.00
41	Galena, g. s. l.	Utah.	1,000,000	100,000	10	.....	.....	.....	.....	71,000	Jan ..	1897	.05
42	Garfield-Grouse, g.	Colo..	1,200,000	1,200,000	1	*	.....	.....	.....	24,000	Dec ..	1896	.01
43	Geyser-Marion, g.	Utah.	1,500,000	300,000	5	.....	.....	.....	.....	18,000	May..	1897	.03
44	Gold Coin, g. s.	Colo..	1,000,000	200,000	5	*	.....	.....	.....	140,000	May..	1897	.10
45	Golden Eagle, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	10,000	Sept..	1896	.01
46	Golden Fleece, g. s.	Colo..	600,000	600,000	1	*	.....	.....	.....	569,179	Feb..	1897	.01
47	Gold & Globe, g.	Colo..	750,000	750,000	1	*	.....	.....	.....	36,000	Aug..	1896	.00⅓
48	Granite Mountain, g. s.	Mont.	10,000,000	400,000	25	*	.....	.....	.....	12,120,000	July..	1892	.20
49	Gt. West'n Quicksilv., q.	Cal ..	5,000,000	50,000	100	.....	.....	.....	.....	388,366	Nov..	1893	.10
50	Harquahala, g.	Ariz..	1,500,000	300,000	5	.....	.....	.....	.....	126,000	Nov..	1894	.12
51	Hecla Cons., g. s. c. l.	Mont.	1,500,000	30,000	50	*	.....	.....	.....	2,175,000	Feb..	1897	.50
52	Helena & Frisco, s. l.	Idaho	2,500,000	500,000	5	*	.....	.....	.....	475,000	Aug..	1896	.04
53	Highland. g.	S. D..	10,000,000	100,000	100	.....	.....	.....	.....	3,344,918	Feb..	1897	.20
54	Homestake, g.	S. D..	12,500,000	125,000	100	200,000	July..	1878	1.00	6,243,750	May .	1897	.25
55	Hope, s.	Mont.	1,000,000	100,000	10	*	.....	.....	.....	692,252	May .	1897	.10
56	Horn-Silver, g. s. c. sp. l.	Utah.	10,000,000	400,000	25	*	.....	.....	.....	5,130,000	Jan ..	1896	.12½
57	Idaho.	B. C..	500,000	500,000	1	.....	.....	.....	.....	152,000	Mar..	1897	.05
58	Iowa, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	65,000	Feb..	1897	.00½
59	Iron Mountain, s. l.	Mont.	5,000,000	500,000	10	*	.....	.....	.....	492,500	Nov..	1896	.06
60	Iron Silver, s. l.	Colo..	10,000,000	500,000	20	*	.....	.....	.....	2,500,000	April.	1889	.20
61	Isabella, g.	Colo..	2,250,000	2,250,000	1	.....	.....	.....	.....	258,750	Mar..	1897	.02½
62	Kearsarge, c.	Mich.	1,000,000	40,000	25	190,000	Oct..	1887	1.00	120,000	Dec..	1895	1.00
63	Kennedy, g.	Cal ..	10,000,000	100,000	100	.....	.....	.....	.....	1,796,000	Aug..	1895	.48
64	Last Chance, s. l.	B. C..	500,000	500,000	1	*	.....	.....	.....	40,000	Jan ..	1897	.04
65	Leadville Cons., s. l.	Colo..	4,000,000	400,000	10	*	.....	.....	.....	316,000	Feb..	1893	.03
66	Le Roi.	B. C..	500,000	500,000	1	.....	.....	.....	.....	400,000	May .	1897	.05
67	Little Chief, s. l. i-o.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	820,000	Dec..	1890	.05
68	Maid of Erin, g. s. c. l.	Colo..	3,000,000	600,000	5	*	.....	.....	.....	740,000	Nov..	1895	.02
69	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	*	.....	.....	.....	1,150,000	Nov..	1896	.05
70	Mayflower Gravel, g.	Cal ..	1,200,000	60,000	20	.....	.....	.....	.....	166,897	Dec..	1895	.10
71	May-Mazeppa Con., l. s.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	170,000	Oct..	1891	.03¼
72	Mercur, g.	Utah.	5,000,000	200,000	25	*	.....	.....	.....	700,000	May .	1897	.12½
73	Minnesota Iron, i.	Minn.	16,500,000	165,000	100	*	.....	.....	.....	3,240,009	July..	1896	1.50
74	Mollie Gibson, s.	Colo..	5,000,000	1,000,000	5	20,000	Jan ..	1891	.02	4,080,000	Jan ..	1895	.05
75	Monitor, g.	S. D..	2,500,000	250,000	10	.....	.....	.....	.....	45,000	Oct..	1890	.03
76	Montana, Ltd., g. s.	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,890 637	Oct..	1895	.06¼
77	Montana Ore Purchas'g	Mont.	1,000,000	40,000	25	*	.....	.....	.....	560,000	April.	1897	1.00
78	Moon Anchor Gold.	.....	600,000	600,000	1	*	.....	.....	.....	24,000	July..	1896	.01
79	Moose, g.	Colo..	600,000	600,000	1	.....	.....	.....	.....	186,000	Jan ..	1896	.01
80	Morning Star, g.	Cal...	240,000	240,000	100	70,800	Feb..	1887	.75	510,000	May .	1897	.50
81	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	30,000	Oct..	1896	.00½
82	Napa, q.	Cal ..	700,000	100,000	7	*	.....	.....	.....	830,000	April.	1897	.10
83	New Elkhorn	Colo..	1,500,000	300,000	5	.....	.....	.....	.....	72,000	Sept..	1896	.24
84	New Guston, g. s. c.	Colo..	550,000	110,000	5	*	.....	.....	.....	1,198,120	Oct ..	1892	.25
85	New Hoover Hill, g.	N. C..	300,000	120,000	2.50	*	.....	.....	.....	22,500	Dec..	1885	.20
86	New Idria Quicksilver.	Cal...	.....	100,000	.....	.....	.....	.....	.....	10,000	June.	1897	.10
87	N.Y.&Hon.Rosario, s.g.	C. A..	1,500,000	150,000	10	*	.....	.....	.....	757,500	May .	1897	.10
88	North Star, g.	Cal ..	2,000,000	200,000	10	20,000	June.	1885	.02	450,000	June.	1893	.50
89	Nugget, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	10,000	Jan ..	1895	.00½
90	Ontario, s. l.	Utah.	15,000,000	150,000	100	.....	.....	.....	.....	13,430,000	June.	1897	.10
91	Osceola, c.	Mich.	1,250,000	50,000	25	*	.....	.....	.....	2,122,500	Feb..	1897	1.00
92	Pacific Coast Borax, b.	Cal ..	2,000,000	20,000	100	.....	.....	.....	.....	422,500	July..	1893	1.00
93	Parrot, c.	Mont.	2,300,000	230,000	10	*	.....	.....	.....	1,622,215	June.	1894	.05
94	Pennsylvania Cons.	Cal...	5,150,000	51,500	100	14,000	Feb..	1892	.05	12,925	May .	1897	.05
95	Pharmacist, g.	Colo..	1,200,000	1,200,000	1	.....	.....	.....	.....	80,000	Jan ..	1893	.01
96	Portland, g.	Colo..	3,000,000	3,000,000	1	*	.....	.....	.....	1,013,000	May .	1897	.01
97	Princess, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	45,000	Feb..	1897	.00½
98	Quincy, c.	Mich.	2,500,000	100,000	25	*	.....	.....	.....	9,070,000	Feb..	1897	8.00
99	Rambler-Cariboo	B. C..	1,000,000	1,000,000	1	.....	.....	.....	.....	40,000	April.	1897	.02
100	Reco, s. l.	B. C..	1,000,000	1,000,000	1	.....	.....	.....	.....	187,500	May .	1897	.50
101	Reed National, s.	Colo..	500,000	500,000	1	*	.....	.....	.....	45,000	Dec..	1890	.01
102	Robinson Cons., s. l.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	585,000	Mar..	1886	.05
103	Running Lode, g. s. l.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	27,000	June.	1893	.00½
104	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	.....	.....	.....	22,000	Mar..	1897	.00½
105	St. Joseph, l.	Mo...	2,500,000	250,000	10	.....	.....	.....	.....	.....	Mar..	1897	.15
106	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	3,000	Jan ..	1897	.02	1,050,000	May .	1897	.25
107	Slocan Star.	B. C..	1,000,000	2,000,000	0.50	.....	.....	.....	.....	350,000	Mar..	1897	.05
108	Small Hopes, s.	Colo..	5,000,000	250,000	20	*	.....	.....	.....	3,375,000	Mar..	1896	.10
109	||Smuggler Union, g. s.	Colo..	5,000,000	50,000	100	.....	.....	.....	.....	150,000	Oct..	1896	1.00
110	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	.....	.....	.....	37,460	April.	1897	.05
111	§Standard Cons., g. s.	Cal...	20,000,000	200,000	100	.....	.....	.....	.....	3,737,868	Mar..	1897	.10
112	Swansea, s. l.	Utah.	500,000	100,000	5	.....	.....	.....	.....	41,500	May .	1897	.05
113	Tamarack, c.	Mich.	1,500,000	60,000	25	.....	.....	.....	.....	4,770,000	Dec..	1896	3.00
114	Tom Boy, g.	Colo..	2,000,000	200,000	10	*	.....	.....	.....	410,000	Mar..	1896	.20
115	Trinity River, g.	Cal ..	500,000	500,000	1	*	.....	.....	.....	15,000	July..	1893	.00½
116	Union, g.	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....	73,000	June.	1896	.01
117	Union Leasing.	Colo..	500,000	500,000	1	.....	.....	.....	.....	340,000	July..	1895	.04
118	Utah.	Utah.	1,000,000	100,000	10	*	.....	.....	.....	175,000	Feb..	1897	.02
119	Victor, g.	Colo..	1,000,000	200,000	5	*	.....	.....	.....	765,000	Mar..	1897	.10
120	War Eagle	B. C..	500,000	500,000	1	32,500	Dec..	1894	.....	187,000	Oct..	1896	.06
121	Western Mine Enterp.	Mont.	500,000	500,000	1	*	.....	.....	.....	12,000	Mar..	1897	.10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Val	Assessments. Total Levied.	Assessments. Date and Amount of Last.		
1	Ada Cons., s. l.	Utah.	$100,000	100,000	$1	$3,333	Nov..	1895	.01½
2	Ajax, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
3	Alice, g. s. c.	Colo..	5,000,000	5,000,000	1	*	.....	.....	.....
4	Alliance, g. s. l.	Utah.	100,000	100,000	1	200,000	Dec..	1895	.10
5	Alpha Cons., g. s.	Nev..	10,500,000	105,000	100	262,750	April.	1897	.05
6	Alta, s.	Nev..	10,080,000	108,000	100	3,601,360	June.	1897	.05
7	American, c.	Idaho	5,000,000	500,000	10	*	.....	.....	.....
8	¶American Belle, g.s.c	Colo..	2,000,000	400,000	5	*	.....	.....	.....
9	¶Anaconda, g.	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....
10	Anchor, g. s. l.	Utah.	1,500,000	150,000	10	560,000	Aug..	1893	.20
11	Aola, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
12	Argonaut Cons., g. s.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
13	Belcher, s. g.	Nev..	10,400,000	104,000	100	3,338,420	April.	1897	.25
14	Belle Isle.	Nev..	10,000,000	100,000	100	240,271	July..	1896	.10
15	Ben Hur, g.	Colo..	900,000	900,000	1	.....	.....	.....	.....
16	Blue Bell, g.	Colo..	500,000	500,000	1	*	.....	.....	.....
17	Blue Jay Cons., s. l.	Utah.	2,000,000	400,000	5	4,750	July..	1893	.004
18	Bob Lee, g.	Colo..	1,200,000	1,200,000	1	*	.....	.....	.....
19	Boston & Crip. Creek	Colo..	200,000	200,000	1	.....	.....	.....	.....
20	Bullion, s. g.	Nev..	1,000,000	100,000	100	3,050,000	June.	1897	.10
21	¶Bunker Hill & S., s.l.	Idaho	3,000,000	300,000	10	.....	.....	.....	.....
22	Burlington, g. s.	Cal...	10,000,000	100,000	100	3,000	May..	1896	.03
23	Butte & Boston Con., c	Mont.	2,000,000	200,000	10	.....	.....	.....	.....
24	Butte Queen, g.	Cal...	1,000,000	100,000	10	16,000	Feb..	1893	.10
25	Calumet, g.	Colo..	1,400,000	1,400,000	1	*	.....	.....	.....
26	Centennial, c.	Mich.	2,000,000	80,000	25	220,000	April	1897	1.00
27	Central Lead. l.	Mo..	400,000	4,000	100	*	.....	.....	.....
28	Central North Star, g	Cal...	1,000,000	100,000	10	10,000	July..	1893	.10
29	Challenge, s, g.	Nev..	5,000,000	50,000	100	305 000	June.	1897	.10
30	Chollar, g. s.	Nev..	11,200,000	112,000	100	2,038,400	June.	1897	.15
31	¶Chrysolite, s. l.	Colo..	10,000,000	200,000	50	*	.....	.....	.....
32	Cleveland Cliffs, i.	Mich.	5,000,000	50,000	100	*	.....	.....	.....
33	Columbine, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
34	¶Confidence, g. s.	Nev..	2,496,000	24,960	100	1,644,462	April.	1897	.30
35	Cons. Imperial, g. s.	Nev..	5,000,000	50,000	100	2,082,500	Mar..	1897	.01
36	Creede & C. C., g.	Colo..	800,000	800,000	1	.....	.....	.....	.....
37	CrippleCreekCons., g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
38	Crip. Cr'k Gold Expl'n	Colo..	1,800,000	1,800,000	1	.....	.....	.....	.....
39	Dante, g.	Colo..	1,250,000	1,250,000	1	*	.....	.....	.....
40	Denver City, s.	Colo..	5,000,000	500,000	10	*	.....	.....	.....
41	Denver Gold, g.	Colo..	300,000	60,000	5	.....	.....	.....	.....
42	Dickens-Custer, g. s..	Colo..	2,100,000	420,000	5	.....	.....	.....	.....
43	¶Enterprise, g.	Colo..	800,000	800,000	1	.....	.....	.....	.....
44	¶Eureka Cons., g. s. l.	Nev..	1,000,000	50,000	20	567,500	Feb..	1897	.25
45	Eureka Con. Drift, g.	Cal...	500,000	500,000	1	140,000	May..	1897	.05
46	Exchequer, g. s.	Nev..	10,000,000	100,000	100	725,000	Dec..	1896	.05
47	Favorite, g.	Colo..	1,200,000	1,200,000	1	*	.....	.....	.....
48	Free Coinage. g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
49	Galena, l. s.	Idaho	500,000	500,000	1	.....	.....	.....	.....
50	Gold Belt, g. s.	Utah.	500,000	500,000	1	3,012	July..	1896	.00½
51	Golden Age, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
52	Golden Dale, g.	Colo..	2,000,000	2,000,000	1	*	.....	.....	.....
53	Golden Fleece Grav. g	Cal...	130,000	130	1000	56,260	Mar..	1897	2.00
54	Gold Flat, g.	Cal...	1,000,000	100,000	10	13,000	Aug..	1893	.03
55	Gold King, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
56	¶Gold Rock, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
57	Gold Standard, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
58	Gould & Curry.	Nev..	10,800,000	108,000	100	4,872,000	June.	1897	.20
59	¶Hale & Norcross, g.s.	Nev..	11,200,000	112,000	100	5,798,000	April.	1897	.10
60	Head Cent. & Tr., g.s.	Ariz..	2,000,000	200,000	10	22,824	Mar..	1892	.03
61	Hidden Treas., g. s.	Cal...	20,000	20,000	1	1,000	Nov..	1893	.05
62	Humboldt Cons.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
63	Idaho Co., Ltd., g.	Idaho	100.000	1,000	100	*	.....	.....	.....
64	Idlewild, g.	Cal...	1,000,000	100,000	10	*	.....	.....	.....
65	Jack Pot, g.	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....
66	Jackson, l.	Mich.	300,000	12,000	25	*	.....	.....	.....
67	Justice, g. s. c.	Colo..	500,000	500,000	1	*	.....	.....	.....
68	Keystone, g.	Colo..	1,500,000	1,500,000	1	*	.....	.....	.....
69	Lacrosse, g.	Colo..	1,000,000	100,000	10	*	.....	.....	.....
70	Matoa, g.	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....
71	Mayflower, g.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....
72	Merced, g.	Cal...	1,500,000	100,000	15	200,000	July..	1896	2.00
73	Mexican, g. s.	Nev..	10,080,000	100,809	100	3,104,240	April.	1897	.20
74	Milwaukee, s. l.	Idaho	500,000	500,000	1	.....	.....	.....	.....
75	Modoc Chief, g. s. l.	Idaho	1,000,000	200,000	5	4,375	Jan..	1892	.00½
76	Monarch, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
77	¶Mt. Diablo, s.	Nev..	5,000,000	50,000	100	145,000	Nov..	1896	.10
78	Mutual, g.	Colo..	500,000	500,000	1	.....	.....	.....	.....
79	New Gold Hill.	N. C..	1,750,000	350,000	5	.....	.....	.....	.....
80	New Viola, s. l.	Idaho	750,000	150,000	5	*	.....	.....	.....
81	North Banner, g. s.	Cal...	1,000,000	100,000	10	21,794	Oct..	1896	.02
82	¶North Belle Isle, s.	Nev..	10,000,000	100,000	100	523,074	July..	1896	.10
83	Occidental Cons., g.s.	Nev..	10,000,000	100,000	100	473,652	June.	1897	.10
84	Original Keystone, s.	Nev..	10,000,000	100,000	100	250,000	Mar..	1892	.10
85	Oro Cache, g. s.	S. D..	1,250,000	250,000	5	6,250	July..	1893	.00½
86	Orphan Bell, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
87	Overman Silver, g. s.	Nev..	1,152,000	115,200	100	4,200,080	May..	1897	.10
88	Peer, s.	Ariz..	10,000,000	100,000	100	215,000	July..	1894	.05
89	Peerless, s.	Nev..	10,000,000	100,000	100	410,000	July..	1894	.05
90	Pine Hill, g.	Cal ..	1,000,000	100,000	10	30,000	July..	1897	.05
91	Potosi, g. s.	Nev..	11,200,000	112,000	100	2,044,000	April.	1897	.20
92	Princess, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
93	Puritan, g, s.	Colo..	1,500,000	150,000	10	*	.....	.....	.....
94	¶Quicksilver. pref., q.	Cal ..	4,300,000	43,000	100	*	.....	.....	.....
95	¶ " com., q.	Cal ..	5,700,000	57,000	100	*	.....	.....	.....
96	Quincy, c.	Colo..	3,000,000	300,000	10	.....	.....	.....	.....
97	Red Mountain, s.	Colo..	300,000	60,000	5	22,500	Mar..	1891	.12½
98	Reward, g.	Cal...	64,000	64,000	1	57,280	June.	1897	.02
99	St. Mary, c.	Mich.	1,000,000	40,000	25	4,000	July..	1895	.05
100	Savage, g. s.	Nev..	11,200,000	112,000	100	1,073,800	May..	1897	.20
101	Seg. Belcher & M., g.s.	Nev..	10,000,000	100,000	100	345.000	May..	1897	.05
102	Sevier, g. s.	Utah.	1,250,000	250,000	5	50,000	April.	1897	.10
103	Silver Age, g. s. l.	Colo..	2,000,000	200,000	10	*	.....	.....	.....
104	Silver Hill, s.	Nev..	10,800,000	108,000	100	1,992,600	July..	1897	.10
105	¶Silver King, s.	Ariz..	10,000,000	100,000	100	279,858	Jun		
106	Silver Queen, c.	Ariz..	5,000,000	200,000	25	*	.....	.....	.....
107	Silver State, g.	Colo..	700,000	700,000	1	*	.....	.....	.....
108	Siskiyou Con., s.	Cal ..	2,000,000	200,000	10	44,000	June.	18	01
109	Specimen, g.	Colo..	1,200,000	1,200,000	1	.....	.....	.....	.....
110	¶Temonj, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
111	Tombstone, g. s. l.	Ariz..	12,500,000	500,000	25	*	.....	.....	.....
112

RARE ELEMENTS, CHEMICALS AND MINERALS—CURRENT PRICES.

NOTE.—This table is revised up to June 8th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

CHEMICALS AND MINERALS.

These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts.

	Cust.	Meas.	Price.
Abrasives—			
Carborundum, grains, f.o.b. Niagara Falls	lb.		$0 15@$0 16
Corundum	"		.07
Emery, Turkish flour	"		.03@.03½
Grains	"		.04½@.05½
Naxos flour	"		.03@.03½
Grains	"		.04½@.05½
Chester flour	"		.02@.03
Grains	"		.04@.05
Peekskill flour	"		.01¼
Grains	"		.02¼
Pumice Stone, pure ground and bolted	"		.02
Lump	"		.05@.12
Rottenstone, ground	"		.03@.03½
Lump, according to quality	"		05½@.12
Acids—			
Acetic, pure (30%)	"		.02¼
Chem. pure	"		.15@.20
Benzoic, English, ex-gum	oz.		.07
German, ex-Toluol	lb.		.50@.55
Boracic Am. refined cryst	"		.08
Powdered	"		.08½
Carbolic, cryst. in bottles	"		.24@.26
In drums	"		.18@.19½
Chromic, com'l	"		.25
C. p. cryst. (retail)	"		.80
Hydrochloric, c. p. (in carboys)	"		.10@.12
Hydrofluoric XX	"		.05
X	"		.15
Best	"		.25
Phosphoric, English, st. p	"		.24
Sulphuric, c. p. (in cbys.)	"		.10@.12
Tartaric, cryst	"		.28@.28½
Powder	"		.28½@.29
Alcohol—94%	gal.		2.20@2.35
Refined wood, 95%	"		.65
" " 97%	"		.70
" " purified	"		1.20@1.50
Alum—Lump	100 lbs.		1.65@1.75
Ground	"		1.75@1.85
Porous	"		1.50@2.00
Chrome, com'l	"		3.00@4.00
Aluminum—			
Chloride, pure cryst. (retail)	lb.		1.00
Oxide, hydrated	"		.15
Sulphate, com'l	"		.01¼@.01¾
Pure cryst. (retail)	"		1.00
Ammonia—			
Aqua (in carboys), 16°	"		.03¼
18°	"		.04@.05
20°	"		.05¼@.05¼
36°	"		.06¼@.06¾
Ammonium—			
Bromide, pure	"		.52@.53
Carbonate	"		.07½@.09
Chloride, granulated	"		.05@.07
Chem. pure	"		.10½
Muriate, white gran. dry (99%)	"		.05¾@.06¾
Gray	"		.04⅝
Nitrate, white, pure (99%)	"		.09
Sulpho-cyanide	"		.25
Chem. pure	"		.35
Antimony—			
Metallic, Japan, powder st. p	"		.06½
Oxide	"		.12@.13
Sulphide, powdered	"		.06
Pentasulphide	"		.20
Argols—Red ordinary	"		.02½
(30%@80%)	"		.05¾@.15
Arsenic—White, powder	"		.04⅞@.05¼
Red, Saxony	"		.07½
Silesian	"		.07¼
Asbestos—Fibrous	"		.04@.20
Cloth-board	"		.03¼
Yellow fiberized	sh. ton		11.00@20.00
White "	"		15.00@25.00
Pipe covering, ordinary	lb.		.20
Asphaltum—			
Trinidad, refined	lg. ton		31.50@36.50
Bermuda, refined	"		40.00
Egyptian, refined	lb.		.05@.07
Barium—			
Carbonate, American	lg. ton		26.00@30.00
Com'l (90@92%)	lb.		.02
Pure (98%)	"		.02½
Foreign	sh. ton		25.00
Chloride, com'l	"		34.00
Chem. pure cryst	lb.		.05
Nitrate	"		.05½@.05¾
Nitrite, com'l	"		.05⅞
Oxide	"		.18
Sulphate, com'l (pulp)	"		.01@.02¼
Barytes—Crude	lg. ton		7.75@10.00
American, floated	"		22.00@23.00
Foreign, floated	sh. ton		15.00@18.00
Bauxite—Ga., At mine	"		2.00@3.50
Benzole—90%	gal.		1.00@1.10
C. p. water white	"		1.25
Bismuth—Nitrate, cryst.	oz.		.15
Oxide, hydrated	lb.		2.65
Bone Ash	"		.03
Borax—American, refined, carload	"		.05¼
Bromine—Com'l at wks.	"		.43
Cadmium—			
Metallic sticks (Ger)	kg.		8.14
Sheets (Ger)	"		7.57
Powder (Ger)	"		8.09
Calcium—			
Acetate, brown	100 lbs.		75@.80
Gray	"		1.25@1.30
Bromide (retail)	lb.		.70
Carbonate, ppt	"		.10
Chem pure	"		.75
Hyposulphite	100 lbs.		1.02½@1.07½
Oxide	lb.		.05
Phosphate, ppt	"		.20
Sulphite	"		.07¼
Cement—			
Portland, Am. at works 400 lbs	bbl.		$1.65
German, 400 lbs	"		1.25@2.20
English, 400 lbs	"		1.28@2.25
Natural hydr., "Rosendale," 300 lbs	"		.75@.80
Chalk—Com'l, lump	sh. ton		2.00@2.25
Ppt., English	lb.		.04@.05½
China Clay—			
Lowest grade	sh. ton		11.00
Medium grade	"		12.00@13.50
Best grade	"		17.00
Chrome Ore—			
(50% chrome) ex-ship	lg. ton		25 00
Oxide	lb.		.25@.55
Cobalt—			
Black peroxide (retail)	"		2.00
Carbonate (retail)	"		2.55
Chloride (retail)	"		2.00
Nitrate (retail)	"		2 20
Oxide	100 lbs.		1.60@2.00
Copperas	"		.42½@.52½
Copper—			
Acetate, com'l	lb.		.16@.20
C. p. cryst. (retail)	"		.50
Carbonate, pure ppt	"		.20@.22
Chloride	"		.25
Nitrate, solution (40° B.)	"		.06@.10
Cryst. (retail)	"		.50
Oxide, black	"		.15@.19
Red	"		.16@.20
Sulphate, com'l	"		.04@.06
Chem. pure	"		.10
Explosives—			
Judson R.R. powder, by carload	"		.10
"Rackarock"	"		.25
Dynamite, (40% nitro-glycerine)	"		.20
(50% nitro-glycerine)	"		.24
(60% nitro-glycerine)	"		.28
(75% nitro-glycerine)	"		.36
Glycerine, for nitro (32 2-10° Be.)	"		.11
Nitro Benzole	"		.14@.15
Feldspar—By carload	sh. ton		8.50@11.00
Flint—(See Silica).			
Fluorspar—By carload	"		6.50@11.50
Fuller's Earth—Lump	100 lbs.		.75
Powdered	"		.70@.75
Gilsonite—Ordinary	sh. ton		35.00
Select	"		60.00
Gold—			
Chloride, pure cryst. (retail)	oz.		11.75
Oxide	"		27.50
Gypsum—Am., ground	100 lbs.		.45@.50
English	"		.75@.80
French	"		.70@.75
Iodine—Crude	lb.		2.55
Resublimed	"		3.00
Iron—Muriate	"		02½
Nitrate, com'l	"		.01@.01½
Pure	"		.03¼@.04½
Oxide	"		.01¼@.09
Kaolin—(See China Clay).			
Kryolith	"		.08½
Lead—			
Acetate, brown cryst	"		.05@.05¼
White, cryst	"		.07@.07½
Nitrate, com'l	"		.05½@.06
Chem. pure (retail)	"		.35
Lime—			
Building, about 250 lbs	bbl.		.85@1.00
Slacked and quick	"		.75@1.50
Magnesite—			
Lump	lg. ton		7.00@10.00
Calcined	sh. ton		25.00
Powdered	lg. ton		30.00
Calcined	sh. ton		40.00
Magnesium—			
Metallic, ingots and cubes (Ger)	kg.		6.66@6.90
Powdered (Ger.)	"		7.14
Ribbon or wire (Ger.)	"		9.76
Carbonate	lb.		.11
Chloride, com'l	"		.05
Pure (retail)	"		.25
Manganese—			
Crude, powdered, 70@75%	"		.01¼@.01½
75@85%	"		.01½@.02½
85@90%	"		.02½@.03¼
90@95%	"		.03¼@.05½
Metallic, com'l (93%) (Ger.)	kg.		1.90
Pure	"		3.81
Carbonate, chem. pure	lb.		.20
Oxide, gran'l (90%	"		.03@.03½
Powdered	"		.02@.03½
Peroxide, pure (90%)	"		.02½
Sulphate, powdered	"		.25
Pure cryst	"		.60
Marble Dust, 400 lbs	bbl.		1.10@1.25
Flour	sh. ton		5.50
Mercury—Bichloride	lb.		.57@.59
Bisulphate	"		.59
Pernitrate (retail)	"		1.75
Mica—Ground	"		.03@.04½
Sheets, according to size and quality.			
Mineral Wool—Ord	sh. ton		30.00
Slag	"		19.50
Nickel—			
Oxide, black, No. 1	lb.		.65@.75
No. 2	"		.48@.50
Green	"		.55@.60
Oils, Mineral—Black, reduced 29 gr. 25@30%	gal.		.07@.07½
Black, reduced 29 gr. 15 cold test	"		.07½@.08
Black, reduced 29 gr. zero	"		.10½@.11½
Black, reduced 29 gr. summer	"		.06@.06½
Smith's Ferry, 33@34 gr.	"		.07½@.8¾
West Virginia, nat'l 29 gr	"		.24½@.25
Stock, dark steam ref	"		.07½@.12½
Dark filtered	"		.10½@.15½
Light "	"		.12½@.14½
Extra cold test	"		.25½@.24½
Naphtha, crude	bbl.		5.50
Deodorized	"		6.00
Petroleum, refined, cargoes	bbl.		$6 15
Cases, cargoes	"		6.60
Bulk, N. Y.	"		3.65
Paraffin, high viscosity	gal.		.20@.26
Red No. 1	"		.11@.11½
No. 2	"		.10¼
23½@24 gravity	"		.12@.13
28@32 gravity	"		.08¾@.09¼
35 "	"		.11@.12
Ozokerite	lb.		.05½@.09
Paints—Blanc Fixe	"		.02¼@.02¾
Benzoin, Samatra	"		.35@.40
Marbled	"		.27@.28
Chrome, green, com'l	"		.05@.06
Green, extra	"		.12@.13
Chem. pure	"		.16@.17
Yellow, common	"		.04
Com'l	"		.08
Chem. pure	"		.10½@.12½
Green, Paris, in bulk	"		.11@.12
Lampblack—Com'l	"		.03@.05
Refined	"		.05@.10
Calcined	"		.12@.20
Fine spirit	"		.20@.30
Litharge, American	"		.05¼@.06
English flake	"		.06⅞@.07
Ocher, Rochelle	"		1.10@1.20
American	sh. ton		8.00@17.00
Golden	lb.		.02½@.04
Dutch washed	"		.02¼@.04
French "	"		.01@.01¼
Orange mineral, Amer.	"		.06½@.06¾
English	"		.06½@.07¼
French	"		.08½@.08¾
German	"		.06½@.06¾
Red lead, American	"		.04½@.04¾
Foreign	"		.05½@.06½
Shellac, No. 2, Orange	"		.15@.18
T. N.	"		.15@.16
A. C. Garnet	"		.17@.19
Bleached	"		.17½@.18
S. S. & S. O. S.	"		.21@.22
Triangle G	"		.22½
V. S. O.	"		.23@.24
Diamond I.	"		.26
D. C.	"		.27@.28
Sienna, American raw	"		.00½@.01
Burnt and powder	"		.01¼@.01¼
Italian, raw	"		.01¼@.03½
Burnt and powder	"		.02½@.03¼
Ultramarine	"		.08@.25
Vermilion, Amer. lead	"		.14@.16
Quicksilver	"		.52@.55
Chinese	"		.70@.75
English, imported	"		.60@.65
Artificial	"		.10@.20
White lead, Am., dry	"		.04¼@.05
In oil	"		.05¼@.06
Foreign, dry	"		.04¾@.07½
In oil	"		.04½@.05
Zinc white, Amer., dry	"		.03¾@.05
In oil	"		.08¼@.09½
Antwerp, red seal	"		.05⅞
Green seal	"		.06¾
Paris, red seal	"		.06¾
Green seal	"		.08⅛
V. M., red seal in poppy oil	"		.08¼@.08⅝
Green seal in poppy oil	"		.09½@.10
Palladium—			
Metallic, in sheets, in Germany	grm.		.77
Black (Moor)	"		.71
Pearl Ash	lb.		.05@.05½
Pitch—Coal tar	gal.		.08
Platinum—Bichlori'e dry	oz.		8.00@9.00
Plumbago—American, pulverized, f.o.b., Providence, R. I.	sh. ton		25.00@30.00
German, lump	lb.		.01@.01½
Pulverized	"		.01½@.01¾
Ceylon, crude	"		.01¼@.01½
Pulverized	"		.02@.05
Potash Alum—			
Caustic, pure white	"		.10
(76@78%)	"		.05@.06
(90%)	"		.06@.07
Potassium—			
Metallic, in Germany	kg.		18.56
Acetate (retail)	lb.		.30
Bicarbonate cryst	"		.08@.8¼
Bichromate	"		.10@.10¼
Bromide, gran	"		.41½
Carbonate	"		.04¾@.05½
Chloride, pure (retail)	"		.25
Chromate (retail)	"		.47
Cyanide (98@100%)	"		.26@.28
Ferricyanide, red, com'l	"		.36@.38
Chem. pure	"		1.25
Ferrocyanide, yellow, com'l	"		.14
Chem. pure	"		.75
Hyposulphite	"		1.02½@1.07½
Iodide, bulk	"		2.35@2.40
In bottles	"		2.45@2.65
Nitrate, double refined	"		.05
Chem. pure cryst	"		.05@.07
Oxalate, neutral (retail)	"		.20
Permanganate, pure cr.	"		.19@.20
Chem. pure (retail)	"		.34
Sulphide, com'l	"		.16
Chem. pure	"		1.00
Tartrate (soluble tartar) (retail)	"		.58
Pyrites—			
Roughs, at seaboard, American, iron	unit		.09@.12
Smalls	"		.08@.10
Spanish, cupreous	"		.10@.11
Non-cupreous	"		.10@.13
Iron, smalls	"		.10@.12
Quartz—(See Silica).			
Salt—			
Domestic, gr. 200 lbs	sack		.55
Lump	sh. ton		12.00
Liverpool, gr. 200 lbs.	sack		.75
Fine	"		1.35
Lump	sh. ton		15.00
Turk's Island, 200 lbs	sack		.25
Saltpeter—Crude	lb.		.03@.03¼
Silica—Precipitated	sh. ton		$12.00
Ground quartz, carload	"		8.50
Lump quartz	"		3.00@4.00
Silver—Chloride (retail)	oz.		.90
Cyanide (retail)	"		1.00
Nitrate	"		.41@.42½
Oxide	"		1.10
Sulphide (retail)	"		1.00
Sodium—			
Metallic, in Germany	kg.		1.19
Acetate	lb.		.03¼@.06
Chem. pure, fused (retail)	"		.30
Bichromate	"		.08½@.08¾
Bisulphite, com'l dry	"		.22
Acid solut (30° Be.)	"		.03
Bromide	"		.47@.48
Carbonate, pure (retail)	"		.10
Chlorate, cryst	"		.10½
Cyanide, pure (retail)	oz.		.55
Hyposulphite	lb.		1.50@1.85
Molybdate, pure (retail)	oz.		.50
Nitrite	lb.		.07½@.10
Oxalate (retail)	"		.45
Phosphate, gran. pure	"		.03@.03¼
Cryst. c. p. (retail)	"		.30
Dry, c. p. (retail)	"		.50
Salicylate	"		.35
Silicate, p. cryst. (retail)	"		1.10
Com'l, lumps	"		.01@.04
Sulphate, pure	"		.10
Sulphite, cryst	"		.04@.06
Granulated (retail)	"		.16
Tartrate, c. p. cryst	"		1.00
Tungstate, com'l (retail)	"		.35
Pure	"		.50
Vanadate, in Germany	100 grms.		2.38
Strontium—			
Carbonate, precipitate	lb.		.12
Nitrate	"		.07@.07½
Oxalate	"		.38
Sulphur—Flour	100 lbs.		1.65@1.75
Roll	"		1.60
Sublimed	"		1.90
Pure, precipitated	lb.		.12
Talc—American	100 lbs.		.40@.60
French	"		.90@1.50
Italian	sh. ton		20.00@35.00
Tellurium—			
Metallic, c. p. in sticks, in Germany	100 grms.		14.28
Powder	"		9.52
Tin—			
Chloride, pure cryst. (retail)	lb.		.22
Fused cryst. (retail)	"		.50
Crystals	"		.09¼@.09½
Muriate	"		.05@.07
Oxide	"		.21@.25
Protoxide	oz.		.25
Tripoli—Powder	lb.		.04
Uranium—Oxide	"		2.10
Wolfram Ore—50%	lg. ton		80.00
60%	"		90.00
70%	"		100.00
75%	"		105.00
Zinc—			
Chloride	"		.05½@.08
Dust, indigo auxiliary	"		.07
Sulphate, cryst	"		.02@.02¼
Sulphide, com'l	"		.02½@.06
Zirconium—			
Oxide (retail)	oz.		.85
Oxide, hydr. (retail)	"		.66

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

	Cust.	Meas.	Price.
Argon—Spectrum (N.Y.)	tube.		$5.00
Barium—Amalgam	grm.		1.19
Electrol	"		5 71
Beryllium—Powder	"		6.42
Crystals	"		9.52
Boron—Amorphous, pure	"		.62
Crystals, pure	"		1.79
Calcium—Electrol	"		4.28
Cerium—Fused	"		2.02
Chromium—Fused	100 grms.		5.95
Com'l pure powder	kg.		1.90
Chem. pure cryst	grm.		.24
Cobalt—(98@99%)	kg.		5.47@5.71
Pure	"		30.94
Didymium—Powder	grm.		4.28
Erbium	"		3.57
Gallium	grain		6.15
Germanium—Powder	grm.		33.32
Fused	"		35.70
Glucinum—Powder	"		6.42
Crystals	"		9.52
Helium—Spectrum (N.Y.)	tube.		6.00
Indium	grm.		4.05
Iridium—Powder	"		1.25
Fused	"		1.31
Lanthanum—Powder	"		4.28
Electrol, in balls	"		9.04
Lithium	"		2.38
Molybdenum—Com'l (95%)	kg.		2.86
Fused, electrol	100 grms.		15.47
Niobium—Chem. pure	grm.		3.81
Osmium	"		.83
Rhodium	"		3.57
Rubidium—Pure	"		4.76
Ruthenium	"		1.49
Selenium—Com'l powder	kg.		30.94
Sublimed powder	"		40.46
Sticks	"		33.32
Silicon—Amorphous	"		23.80
Crystals, pure	100 grms.		13.09
Strontium—Electrol	grm.		6.19
Tantalium—Pure	"		4.28
Thallium	kg.		29.75
Thorium	grm		7.85
Titanium	"		.71
Uranium	"		.60
Vanadium—Fused	"		1.43
Wolfram—Com'l (95@98%)	kg.		.95
Fused	100 grms.		15.47
Powder, pure	kg.		4.76
Yttrium	grm.		3.33
Zirconium—Com'l	kg.		119.00
Pure	grm.		.71